

1N248C, 1N248RC

Silicon Rectifiers

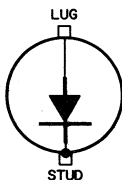
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

GENERAL DATA

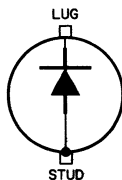
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. D0-5
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N248C



Type 1N248RC



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	55 max.	volts
RMS SUPPLY VOLTAGE.	39 max.	volts
DC BLOCKING VOLTAGE	50 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	20 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	

PEAK RECURRENT CURRENT.	90 max.	amp
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PEAK SURGE CURRENT:^a

For one-half cycle, sine wave	350 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current	3.8	ma



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Semiconductor & Materials Division
Somerville, N. J.

DATA 1
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1N248C, 1N248RC

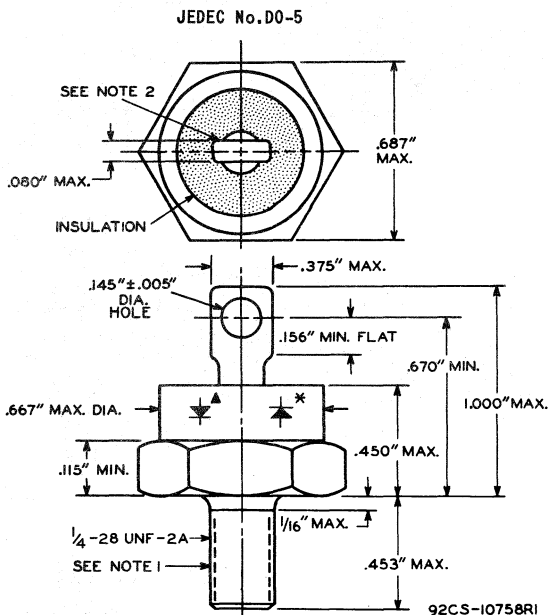
^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

OPERATING CONSIDERATIONS

Because these rectifiers may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier.

The recommended installation torque is 26 to 36 inch-pounds applied to a 1/4-28 UNF-2B hex nut assembled on stud thread.

The applied torque during installation should not exceed 75 inch-pounds.



NOTE 1: MUST WITHSTAND TORQUE OF 30 INCH-POUNDS APPLIED TO 1/4-28 UNF-2B NUT ASSEMBLED ON STUD THREAD.

NOTE 2: ANGULAR ORIENTATION OF THIS TERMINAL UNDEFINED.

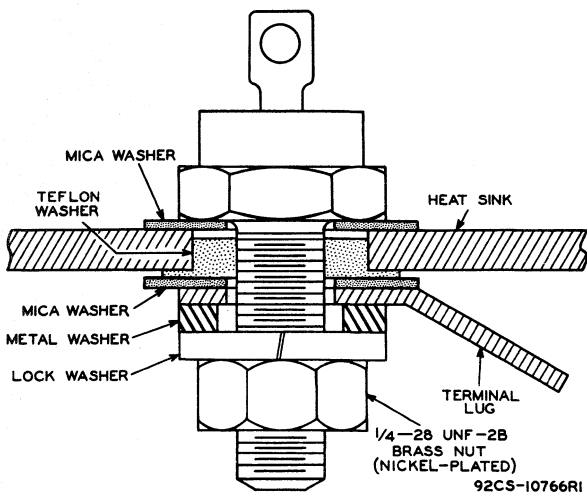
[▲] Polarity symbol for types 1N248C, 1N249C, 1N250C, 1N1195A, 1N1196A, 1N1197A, and 1N1198A.

^{*} Polarity symbol for types 1N248RC, 1N249RC, 1N250RC, 1N1195RA, 1N1196RA, 1N1197RA, and 1N1198RA.

1N248C, 1N248RC

SUGGESTED MOUNTING ARRANGEMENT

Mounting components of the type shown are furnished with each silicon rectifier

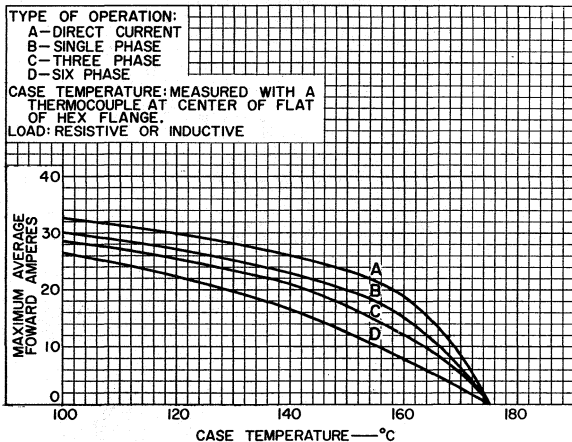


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DATA 2
6-61

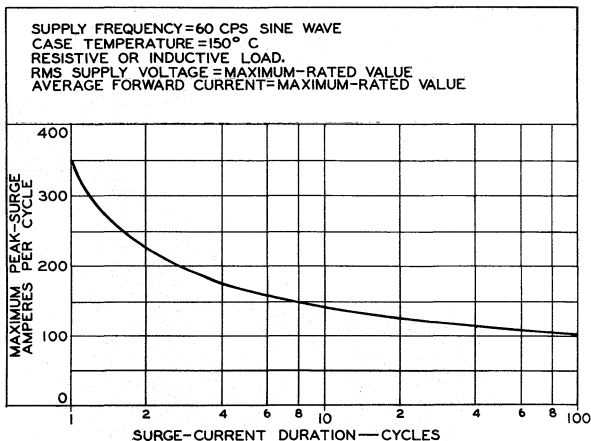
1N248C, 1N248RC

AVERAGE-FORWARD-CURRENT RATING CHART



92CS-10746RI

PEAK-SURGE-CURRENT RATING CHART

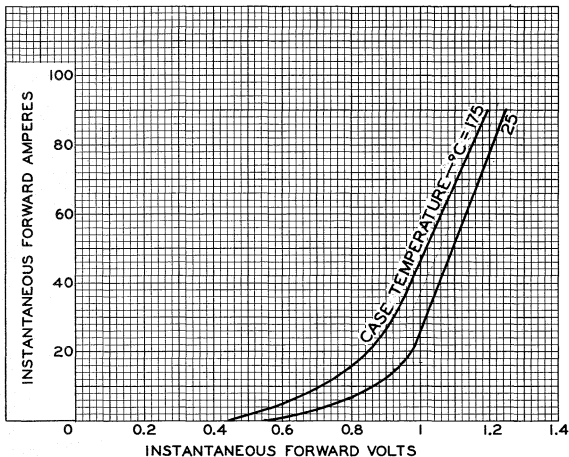


92CS-10909RI



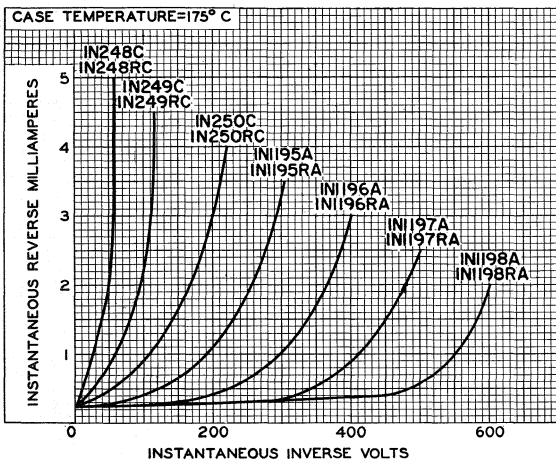
1N248C, 1N248RC

TYPICAL FORWARD CHARACTERISTICS



92CS-10768

TYPICAL REVERSE CHARACTERISTICS

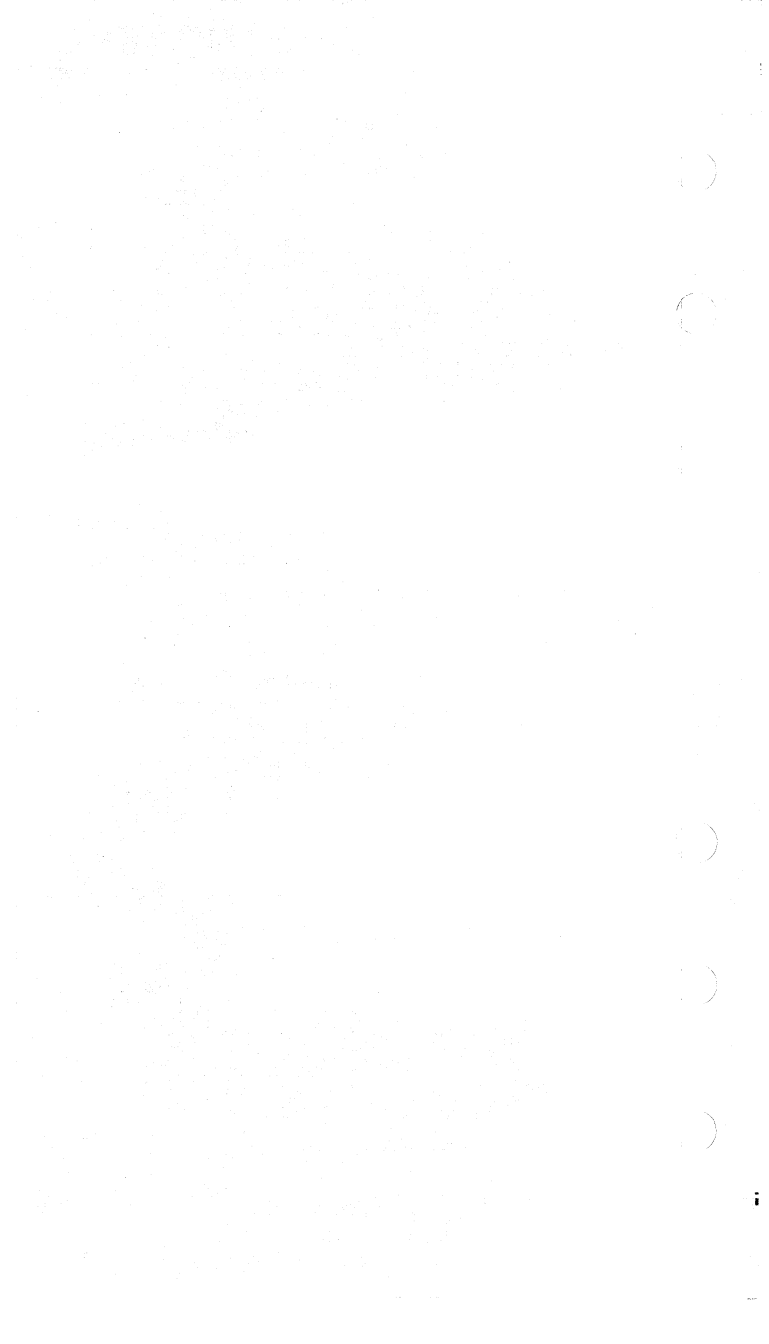


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DATA 3
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1N249C, 1N249RC

Silicon Rectifiers

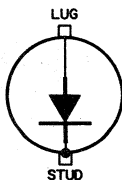
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

GENERAL DATA

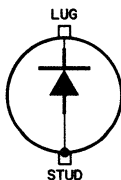
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-5
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N249C



Type 1N249RC



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	110 max.	volts
RMS SUPPLY VOLTAGE.	77 max.	volts
DC BLOCKING VOLTAGE.	100 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	20 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	

PEAK RECURRENT CURRENT.	90 max.	amp
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PEAK SURGE CURRENT:^a

For one-half cycle, sine wave	350 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current.	3.6	ma



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DATA
6-61

1N249C, 1N249RC

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES

shown under Types 1N248C and 1N248RC also apply to the
1N249C and 1N249RC



1N250C, 1N250RC

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

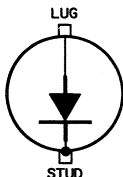
For Industrial and Military Power Supplies

GENERAL DATA

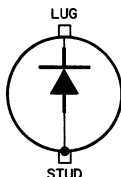
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. DO-5
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N250C



Type 1N250RC



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	220 max.	volts
RMS SUPPLY VOLTAGE.	154 max.	volts
DC BLOCKING VOLTAGE.	200 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	20 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	

PEAK RECURRENT CURRENT.	90 max.	amp
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PEAK SURGE CURRENT:^a

For one-half cycle, sine wave	350 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current	3.4	ma



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Semiconductor & Materials Division
Somerville, N. J.

DATA
6-61

1N250C, 1N250RC

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES

shown under Types 1N248C and 1N248RC also apply to the
1N250C and 1N250RC



IN440-B

IN440-B SILICON RECTIFIER

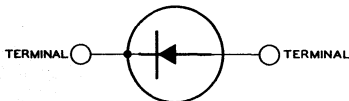
DIFFUSED-JUNCTION TYPE

For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	100 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts
DC REVERSE VOLTAGE.	100 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Peak, recurrent	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	165 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current.	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	0.3	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN440-B



IN440-B

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete cycle) at maximum peak

inverse voltage 100 μ a

OPERATING CONSIDERATIONS

The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the temperature of the solder should not exceed 255° C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

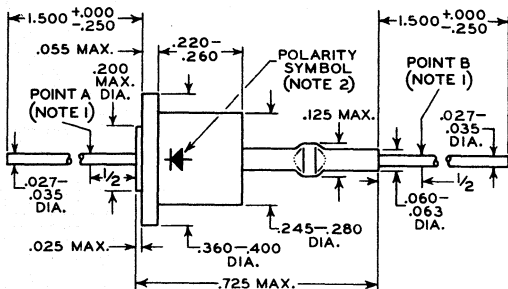
Because the metal case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.



IN440-B

SILICON RECTIFIER

IN440-B



DIMENSIONS IN INCHES

92CS-9728R1

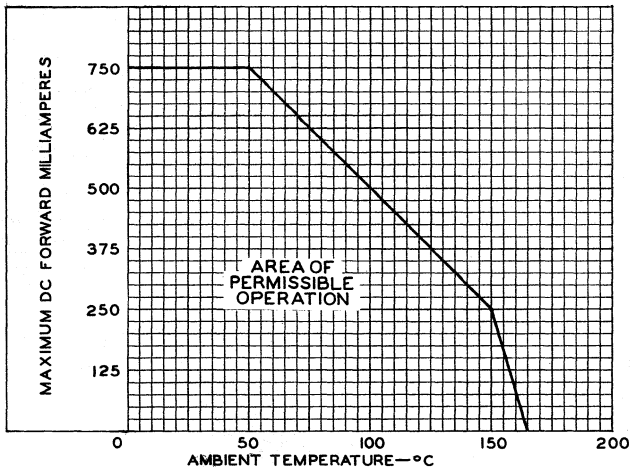
NOTE 1: DO NOT DIP SOLDER BEYOND POINTS A AND B.

NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

8-59

CE-9728R1

DC FORWARD-CURRENT RATING CHART



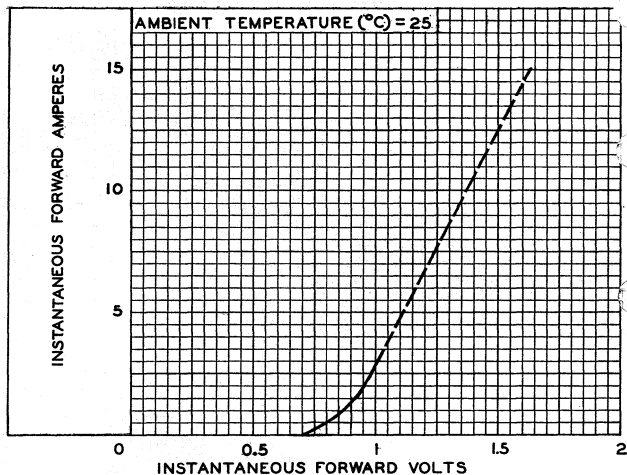
SEMICONDUCTOR and MATERIALS DIVISION 92CS-10060
RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY

IN440-B



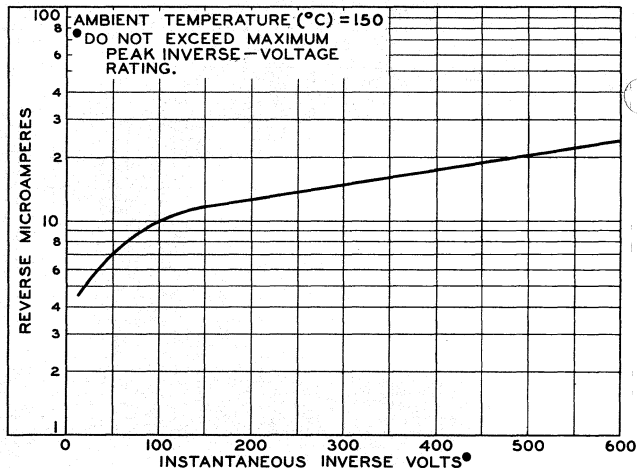
IN440-B

TYPICAL FORWARD-CURRENT CHARACTERISTIC



92CS-10063

TYPICAL REVERSE-CURRENT CHARACTERISTIC





IN441-B

IN441-B

SILICON RECTIFIER

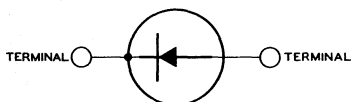
DIFFUSED-JUNCTION TYPE

For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation.	See Dimensional Outline



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	200 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
DC REVERSE VOLTAGE.	200 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Peak, recurrent.	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	165 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current.	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	0.75	μa

IN441-B



IN441-B SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 100 μ a

* For maximum dc forward-current ratings at ambient temperatures other
than those specified, *See Rating Chart.*

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**
shown under Type IN440-B also apply to the IN441-B



IN442-B

IN442-B

SILICON RECTIFIER

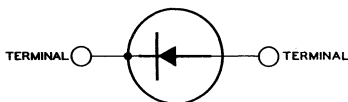
DIFFUSED-JUNCTION TYPE

*For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications*

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



*The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.*

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

*For power-supply frequency of 60 cps
with resistive or inductive load*

PEAK INVERSE VOLTAGE.	300 max.	volts
RMS SUPPLY VOLTAGE.	210 max.	volts
DC REVERSE VOLTAGE.	300 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Peak, recurrent	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	165 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current.	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	1	μa

IN442-B



IN442-B

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete

cycle) at maximum peak

inverse voltage. 200 μ a

* For maximum dc forward-current ratings at ambient temperatures other than those specified, *See Rating Chart.*

OPERATING CONSIDERATIONS,

DIMENSIONAL OUTLINE,

RATING CHART, and CURVES

shown under Type IN440-B also apply to the IN442-B



IN443-B

IN443-B

SILICON RECTIFIER

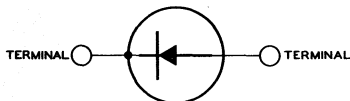
DIFFUSED-JUNCTION TYPE

For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	400 max.	volts
RMS SUPPLY VOLTAGE.	280 max.	volts
DC REVERSE VOLTAGE.	400 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Peak, recurrent	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	165 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	1.5	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN443-B



IN443-B

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak
inverse voltage.

200 μ a

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**

shown under Type IN440-B also apply to the IN443-B



IN444-B

IN444-B

SILICON RECTIFIER

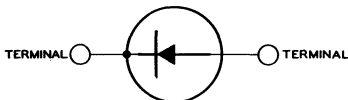
DIFFUSED-JUNCTION TYPE

For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	500 max.	volts
RMS SUPPLY VOLTAGE.	350 max.	volts
DC REVERSE VOLTAGE.	500 max.	volts
FORWARD CURRENT:		
DC: *		
At ambient temperature of 50° C	650 max.	ma
At ambient temperature of 100° C.	425 max.	ma
At ambient temperature of 150° C.	0 max.	ma
Peak, recurrent	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	150 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current.	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	1.75	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN444-B



IN444-B SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete

cycle) at maximum peak

inverse voltage.

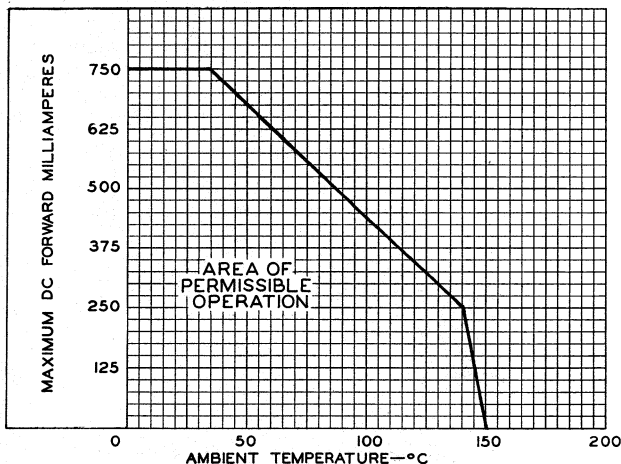
200 μ a

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
and CURVES other than RATING CHART
shown under Type IN440-B also apply to the IN444-B**

8-59

DATA

DC FORWARD-CURRENT RATING CHART





IN445-B

IN445-B

SILICON RECTIFIER

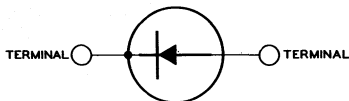
DIFFUSED-JUNCTION TYPE

For use in magnetic amplifiers, dc blocking circuits,
power supplies, and other industrial applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	600 max.	volts
RMS SUPPLY VOLTAGE.	420 max.	volts
DC REVERSE VOLTAGE.	600 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C.	650 max.	ma
At ambient temperature of 100° C.	400 max.	ma
At ambient temperature of 150° C.	0 max.	ma
Peak, recurrent	3.5 max.	amp
Surge, one-cycle.	15 max.	amp
AMBIENT TEMPERATURE (During operation).	150 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at full-load current.	1.5	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	2	μa

IN445-B



IN445-B SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete cycle) at maximum peak

inverse voltage. 200 μ a

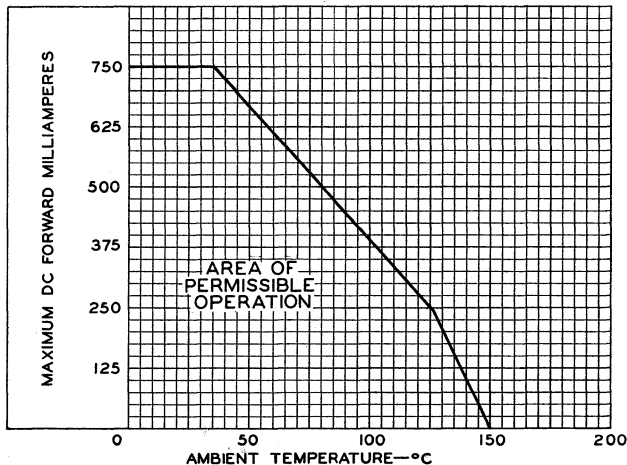
* For maximum dc forward-current ratings at ambient temperatures other than those specified, *See Rating Chart.*

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
and CURVES other than RATING CHART**
shown under Type IN440-B also apply to the IN445-B

8-59

DATA

DC FORWARD-CURRENT RATING CHART





IN536

IN536

SILICON RECTIFIER

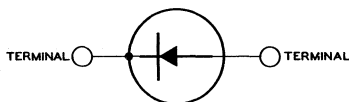
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	50 max.	volts
RMS SUPPLY VOLTAGE.	35 max.	volts
DC REVERSE VOLTAGE.	50 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY	100 max.	kc
AMBIENT-TEMPERATURE RANGE:		
Operating	-65 to +165	°C
Storage	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500	1.1	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	5	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN536



IN536

SILICON RECTIFIER

At ambient temperature of 150°C

Maximum Reverse Current

(Averaged over one complete cycle) at maximum peak

inverse voltage 0.4 ma

OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

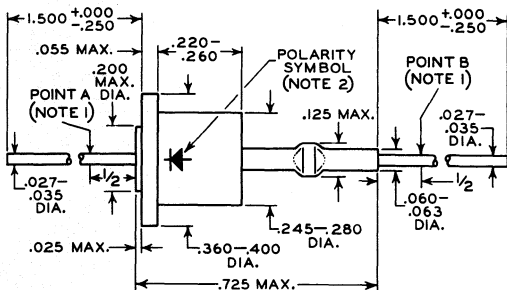
The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the temperature of the solder should not exceed 255°C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

Because the metal case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.



SILICON RECTIFIER

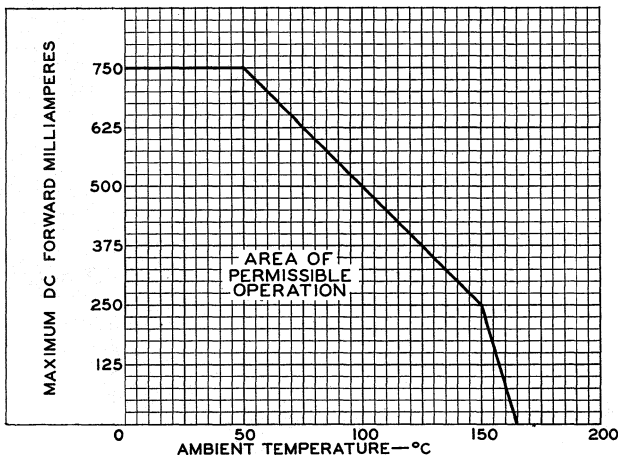


92CS-9728RI

NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

CE-9728R1

DC FORWARD-CURRENT RATING CHART



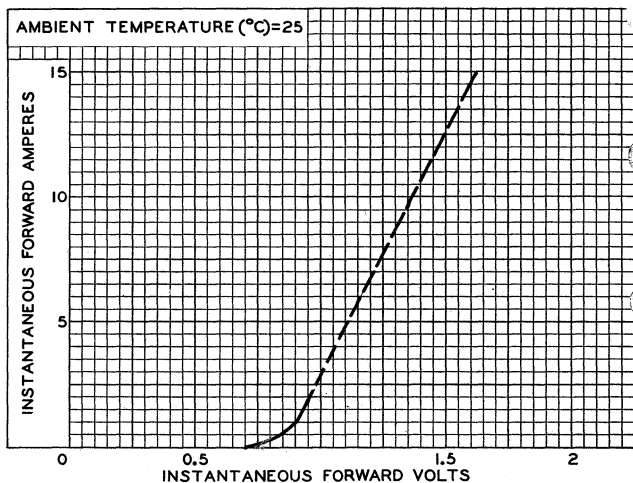
92CS-10082

IN536



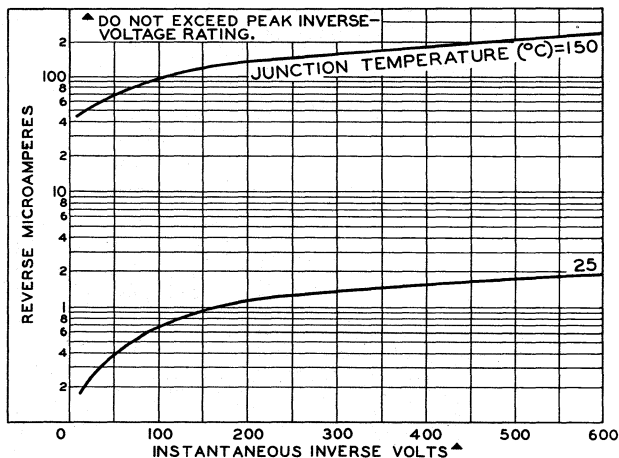
IN536

TYPICAL FORWARD-CURRENT CHARACTERISTIC



92CS-10083

TYPICAL REVERSE-CURRENT CHARACTERISTICS



92CS-10137

SEMICONDUCTOR and MATERIALS DIVISION
 RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY



IN537

IN537

SILICON RECTIFIER

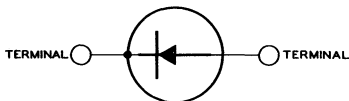
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	100 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts
DC REVERSE VOLTAGE.	100 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating	-65 to +165	°C
Storage	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500	1.1	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	5	µa

IN537



IN537

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 0.4 ma

* For maximum dc forward-current ratings at ambient temperatures other
than those specified, *See Rating Chart.*

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**
shown under Type IN536 also apply to the IN537



IN538

IN538

SILICON RECTIFIER

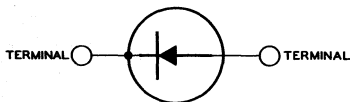
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation.	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	200 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
DC REVERSE VOLTAGE.	200 max.	volts
FORWARD CURRENT:		
DC:*		
At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY.	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating	-65 to +165	°C
Storage	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500.	1.1	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage.	5	μa

IN538



IN538

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 0.3 ma

* For maximum dc forward-current ratings at ambient temperatures other than those specified, *See Rating Chart.*

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**
shown under Type IN536 also apply to the IN538



IN539

IN539

SILICON RECTIFIER

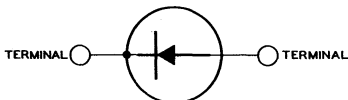
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation.	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	300 max.	volts
RMS SUPPLY VOLTAGE.	210 max.	volts
DC REVERSE VOLTAGE.	300 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma

Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY.	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating.	-65 to +165	°C
Storage.	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500	1.1	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	5	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN539



IN539

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 0.3 ma

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**

shown under Type IN536 also apply to the IN539



IN540

IN540

SILICON RECTIFIER

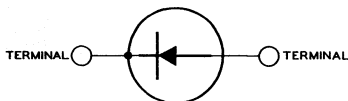
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	400 max.	volts
RMS SUPPLY VOLTAGE.	280 max.	volts
DC REVERSE VOLTAGE.	400 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating	-65 to +165	°C
Storage	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)

at dc forward ma. = 500	1.1	volts
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Maximum Reverse Current (DC)

at maximum peak inverse voltage	5	μa
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* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN540



IN540

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 0.3 ma

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**
shown under Type IN536 also apply to the IN540



IN547

IN547

SILICON RECTIFIER

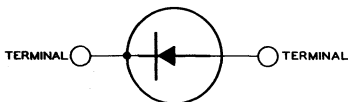
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible.	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE.	600 max.	volts
RMS SUPPLY VOLTAGE.	420 max.	volts
DC REVERSE VOLTAGE.	600 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle.	15 max.	amp
OPERATING FREQUENCY	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating	-65 to +165	°C
Storage	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500	1.2	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage	5	μa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

IN547



IN547

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete
cycle) at maximum peak

inverse voltage. 0.35 ma

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
RATING CHART, and CURVES**
shown under Type IN536 also apply to the IN547



INI095

INI095

SILICON RECTIFIER

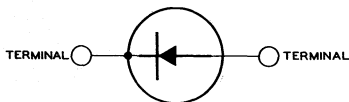
DIFFUSED-JUNCTION TYPE

For industrial and military applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Welded, Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"
Orientation	See Dimensional Outline



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
with resistive or inductive load

PEAK INVERSE VOLTAGE	500 max.	volts
RMS SUPPLY VOLTAGE	350 max.	volts
DC REVERSE VOLTAGE	500 max.	volts

FORWARD CURRENT:

DC:*

At ambient temperature of 50° C.	750 max.	ma
At ambient temperature of 100° C.	500 max.	ma
At ambient temperature of 150° C.	250 max.	ma
Surge, one-cycle	15 max.	amp
OPERATING FREQUENCY.	100 max.	kc

AMBIENT-TEMPERATURE RANGE:

Operating.	-65 to +165	°C
Storage.	-65 to +175	°C

Characteristics:

At ambient temperature of 25° C

Maximum Forward Voltage Drop (DC)		
at dc forward ma. = 500	1.2	volts
Maximum Reverse Current (DC)		
at maximum peak inverse voltage.	5	µa

* For maximum dc forward-current ratings at ambient temperatures other than those specified, See Rating Chart.

INI095



INI095

SILICON RECTIFIER

At ambient temperature of 150° C

Maximum Reverse Current

(Averaged over one complete

cycle) at maximum peak

inverse voltage. 0.3

ma

OPERATING CONSIDERATIONS,

DIMENSIONAL OUTLINE,

RATING CHART, and CURVES

shown under Type IN536 also apply to the INI095

1N1183A, 1N1183RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

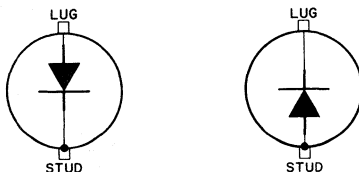
Type 1N1183RA is a reverse-polarity version of type 1N1183A

GENERAL DATA

Mechanical:

Dimensions. See Outline D0-5 in General Section
Terminal Diagrams:

Reverse-polarity version



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	50 max.	volts
RMS SUPPLY VOLTAGE.	35 max.	volts
DC BLOCKING VOLTAGE.	50 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	40 max.	amp
At other case temperatures.	See Average-Forward-Current Rating Chart	

PEAK RECURRENT CURRENT.	195 max.	amp
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PEAK SURGE CURRENT:^a

For one-half cycle, sine wave	800 max.	amp
For one or more cycles, sine wave	See Peak-Surge-Current Rating Chart	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to 200	°C
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Characteristics:

Maximum Forward Voltage Drop (Averaged over one complete cycle for maximum peak reverse volts, maximum average forward amperes = 40, case temperature (°C) = 150).	0.65	volt
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Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak reverse volts, maximum average forward amperes = 40, case temperature (°C) = 150)	2.5	ma
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RADIO CORPORATION OF AMERICA
Electronic Components and Devices Harrison, N. J.

DATA 1
9-63

1N1183A, 1N1183RA

Static (DC value for maximum peak reverse volts, case temperature ($^{\circ}\text{C}$)

= 25) 0.015 ma

Maximum Thermal Resistance:

Junction-to-case. 1 $^{\circ}\text{C}/\text{watt}$

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

OPERATING CONSIDERATIONS

Because these rectifiers may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier.

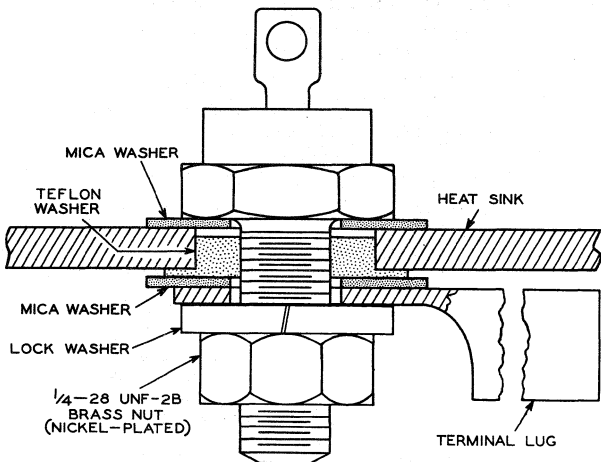
The recommended installation torque is 26 to 36 inch-pounds applied to a 1/4-28 UNF-28 hex nut assembled on stud thread.

The applied torque during installation should not exceed 50 inch-pounds.

SUGGESTED MOUNTING ARRANGEMENT

Device Insulated from Heat Sink

Mounting components of the type shown (except heat sink) are furnished with each rectifier. The increase in thermal resistance with these mounting components is approximately 1.5 $^{\circ}\text{C}/\text{watt}$.



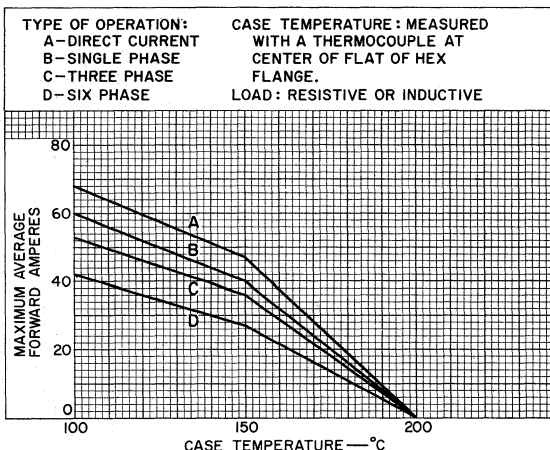
92CS-10766R3

← Indicates a change.



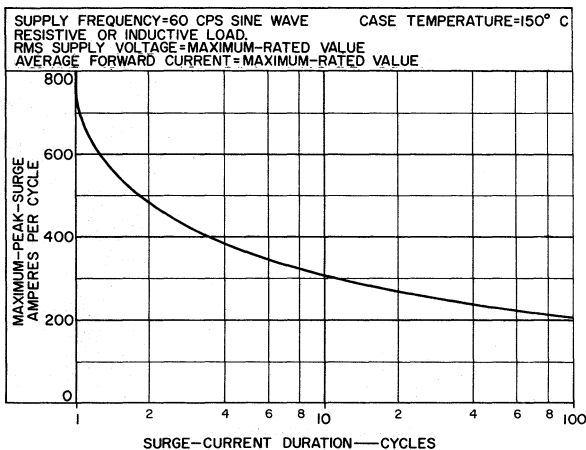
1N1183A, 1N1183RA

AVERAGE-FORWARD-CURRENT RATING CHART



92CS-11342RI

PEAK-SURGE-CURRENT RATING CHART



92CS-11350

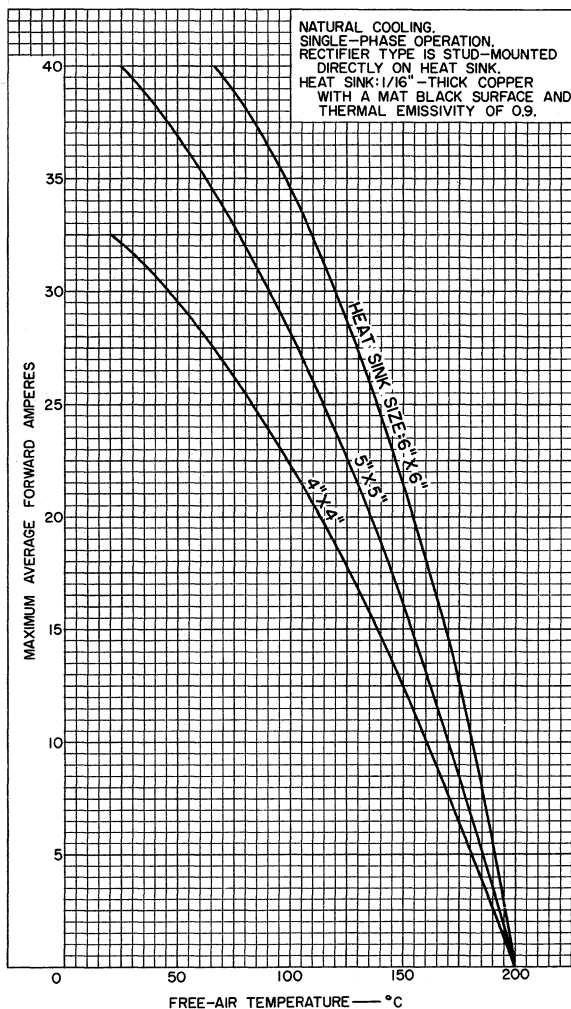


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DATA 2
 9-63

1N1183A, 1N1183RA

OPERATION GUIDANCE CHART

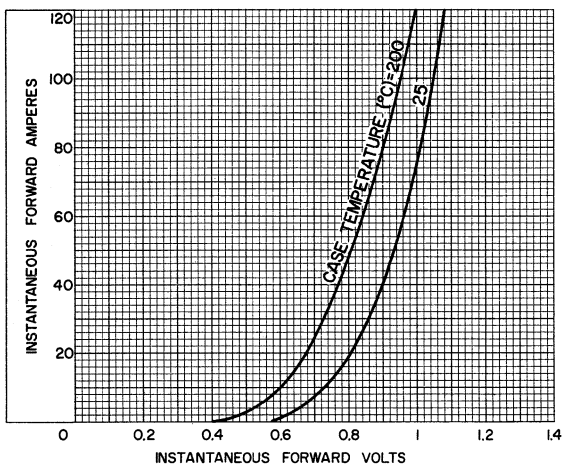


92CM-11348



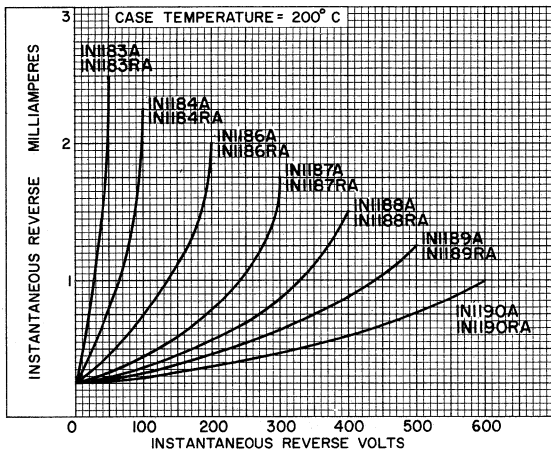
1N1183A, 1N1183RA

TYPICAL FORWARD CHARACTERISTICS



92CS-11340

TYPICAL REVERSE CHARACTERISTICS



92CS-11336R1



RADIO CORPORATION OF AMERICA
Electronic Components and Devices Harrison, N. J.

DATA 3
9-63

1N1184A, 1N1184RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1184RA is a reverse-polarity version of type 1N1184A

The 1N1184A, 1N1184RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	100 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts
DC BLOCKING VOLTAGE	100 max.	volts

1N1186A, 1N1186RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1186RA is a reverse-polarity version of type 1N1186A

The 1N1186A, 1N1186RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	200 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
DC BLOCKING VOLTAGE	200 max.	volts



1N1187A, 1N1187RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1187RA is a reverse-polarity version of type 1N1187A

The 1N1187A, 1N1187RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE	300 max.	volts
RMS SUPPLY VOLTAGE	212 max.	volts
DC BLOCKING VOLTAGE	300 max.	volts



1N1188A, 1N1188RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1188RA is a reverse-polarity version of type 1N1188A

The 1N1188A, 1N1188RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	400 max.	volts
RMS SUPPLY VOLTAGE	284 max.	volts
DC BLOCKING VOLTAGE.	400 max.	volts

Characteristics:

Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak reverse volts, maximum average forward amperes = 40, case temperature ($^{\circ}\text{C}$) = 150). 2.2 ma



1N1189A, 1N1189RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1189RA is a reverse-polarity version of type 1N1189A

The 1N1189A, 1N1189RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	500 max.	volts
RMS SUPPLY VOLTAGE.	355 max.	volts
DC BLOCKING VOLTAGE	500 max.	volts

Characteristics:

Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak reverse volts, maximum average forward amperes = 40, case temperature ($^{\circ}\text{C}$) = 150). 2 ma



1N1190A, 1N1190RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

For Industrial and Military Power Supplies

Type 1N1190RA is a reverse-polarity version of type 1N1190A

The 1N1190A, 1N1190RA are the same as the 1N1183A, 1N1183RA respectively, except for the following items:

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK REVERSE VOLTAGE.	600 max.	volts
RMS SUPPLY VOLTAGE.	424 max.	volts
DC BLOCKING VOLTAGE	600 max.	volts

Characteristics:

Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak reverse volts, maximum average forward amperes = 40, case temperature ($^{\circ}\text{C}$) = 150). 1.8 ma



1N1195A, 1N1195RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

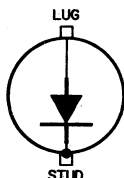
For Industrial and Military Power Supplies

GENERAL DATA

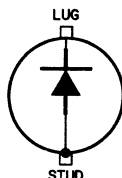
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. D0-5
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1195A



Type 1N1195RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	300 max.	volts
RMS SUPPLY VOLTAGE.	212 max.	volts
DC BLOCKING VOLTAGE	300 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	20 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	

PEAK RECURRENT CURRENT.	90 max.	amp
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PEAK SURGE CURRENT:*

For one-half cycle, sine wave	350 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current	3.2	ma



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1N1195A, 1N1195RA

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Type 1N248C and 1N248RC also apply to the
1N1195A and 1N1195RA



1N1196A, 1N1196RA

Silicon Rectifiers

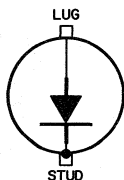
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

GENERAL DATA

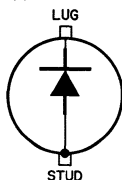
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-5
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1196A



Type 1N1196RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE. 400 max. volts
RMS SUPPLY VOLTAGE. 284 max. volts
DC BLOCKING VOLTAGE. 400 max. volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C 20 max. amp

At other case temperatures. . . See *Average-Forward-Current Rating Chart*

PEAK RECURRENT CURRENT. 90 max. amp

PEAK SURGE CURRENT:^a

For one-half cycle, sine wave 350 max. amp

For one or more cycles. See *Peak-Surge-Current Rating Chart*

CASE-TEMPERATURE RANGE:

Operating and storage -65 to +175 °C

Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop. 0.6 volt
Maximum Reverse Current 2.5 ma



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1N1196A, 1N1196RA

- * Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N248C and 1N248RC also apply to the
1N1196A and 1N1196RA



1N1197A, 1N1197RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

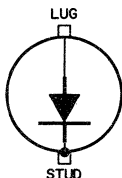
For Industrial and Military Power Supplies

GENERAL DATA

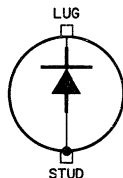
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-5
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1197A



Type 1N1197RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	500 max.	volts
RMS SUPPLY VOLTAGE.	355 max.	volts
DC BLOCKING VOLTAGE.	500 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C	20 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	

PEAK RECURRENT CURRENT.	90 max.	amp
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PEAK SURGE CURRENT:^a

For one-half cycle, sine wave	350 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	

CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current	2.2	ma



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1N1197A, 1N1197RA

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Type 1N248C and 1N248RC also apply to the
1N1197A and 1N1197RA



1N1198A, 1N1198RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

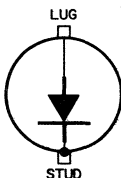
For Industrial and Military Power Supplies

GENERAL DATA

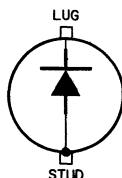
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. D0-5
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1198A



Type 1N1198RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	600 max.	volts
RMS SUPPLY VOLTAGE.	424 max.	volts
DC BLOCKING VOLTAGE	600 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	20 max.	amp
At other case temperatures. . . See <i>Average-Forward-Current Rating Chart</i>		
PEAK RECURRENT CURRENT.	90 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	350 max.	amp
For one or more cycles. . See <i>Peak-Surge-Current Rating Chart</i>		
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +175	°C

Characteristics:

At case temperature of 150° C and maximum-rated voltage and average forward current

Maximum Forward Voltage Drop.	0.6	volt
Maximum Reverse Current	1.5	ma



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1N1198A, 1N1198RA

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N248C and 1N248CA also apply to the
1N1198A and 1N1198RA



1N1199A, 1N1199RA

Silicon Rectifiers

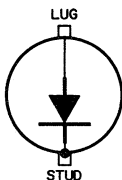
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

GENERAL DATA

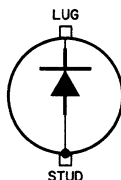
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1199A



Type 1N1199RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE. 50 max. volts

TRANSIENT INVERSE VOLTAGE:

Non-repetitive, for duration of

5-milliseconds maximum. 100 max. volts

RMS SUPPLY VOLTAGE. 35 max. volts

DC BLOCKING VOLTAGE. 50 max. volts

AVERAGE FORWARD CURRENT:

At case temperature of 150° C 12 max. amp

At other case temperatures. . . See *Average-Forward-Current Rating Chart*

PEAK RECURRENT CURRENT. 50 max. amp

PEAK SURGE CURRENT:^a

For one-half cycle, sine wave 240 max. amp

For one or more cycles. See *Peak-Surge-Current Rating Chart*

CASE-TEMPERATURE RANGE:

Operating and storage -65 to +200 °C

Characteristics:

Maximum Forward Voltage Drop^b 0.55 volt

Maximum Reverse Current^b 3 ma



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DATA 1
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1N1199A, 1N1199RA

Maximum Thermal Resistance:

Junction-to-case. 2 °C/watt

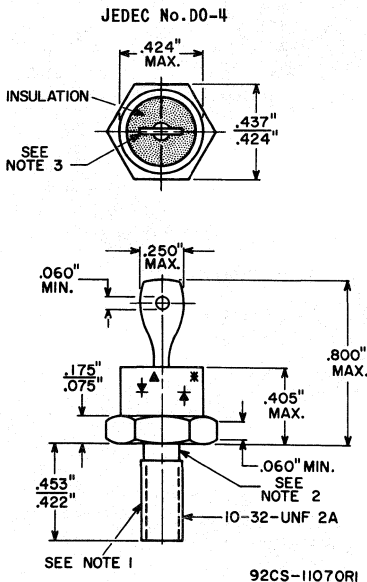
- a** Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.
- b** At case temperature of 150° C and maximum-rated voltage and average forward current.

OPERATING CONSIDERATIONS

Because these rectifiers may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier.

The recommended installation torque is 15 to 20 inch-pounds applied to a 10-32 UNF-2B hex nut assembled on stud thread.

The applied torque during installation should not exceed 25 inch-pounds.



1N1199A, 1N1199RA

NOTE 1: NORMAL INSTALLATION TORQUE IS 15 TO 20 INCH-POUNDS APPLIED TO A 10-32 UNF-2B HEX NUT ASSEMBLED ON STUD THREADS. UNDER NO CIRCUMSTANCES SHOULD THIS VALUE EXCEED 25 INCH-POUNDS.

NOTE 2: DIAMETER OF UNTHREADED PORTION: 0.189" MAXIMUM, 0.169" MINIMUM.

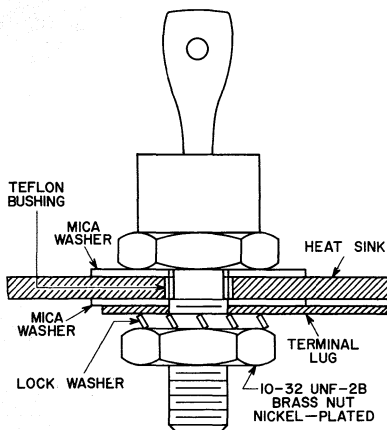
NOTE 3: ANGULAR ORIENTATION OF THIS TERMINAL UNDEFINED.

▲ Polarity symbol for types 1N1199A, 1N1200A, 1N1202A, 1N1203A, 1N1204A, 1N1205A, and 1N1206A.

* Polarity symbol for types 1N1199RA, 1N1200RA, 1N1202RA, 1N1203RA, 1N1204RA, 1N1205RA, and 1N1206RA.

SUGGESTED MOUNTING ARRANGEMENT

Mounting components of the type shown are furnished with each silicon rectifier



92CS-11072RI

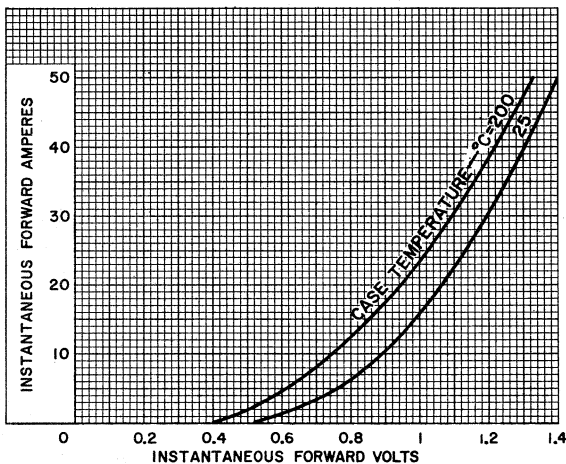


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DATA 2
6-61

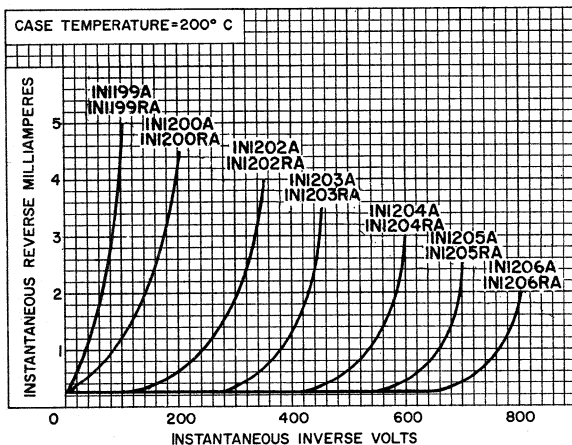
1N1199A, 1N1199RA

TYPICAL FORWARD CHARACTERISTICS



92CS-11063

TYPICAL REVERSE CHARACTERISTICS



92CS-11064RI



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DATA 3
6-61

1N1200A, 1N1200RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

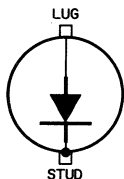
For Industrial and Military Power Supplies

GENERAL DATA

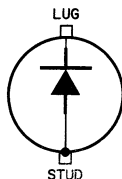
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. DO-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1200A



Type 1N1200RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	100 max.	volts
TRANSIENT INVERSE VOLTAGE: Non-repetitive, for duration of 5-milliseconds maximum.	200 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts
DC BLOCKING VOLTAGE.	100 max.	volts
AVERAGE FORWARD CURRENT: At case temperature of 150° C	12 max.	amp
At other case temperatures. . . See <i>Average-Forward-Current Rating Chart</i>		
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a For one-half cycle, sine wave	240 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE: Operating and storage	-65 to +200	°C



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DATA
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1N1200A, 1N1200RA

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	2.5	ma
Maximum Thermal Resistance:		
Junction-to-case.	2	°C/watt

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

^b At case temperature of 150° C and maximum-rated voltage and average forward current.

OPERATING CONSIDERATIONS, DIMENSIONAL OUTLINE, SUGGESTED MOUNTING ARRANGEMENT, RATING CHARTS, and CURVES

shown under Types 1N1199A and 1N1199RA also apply to the
1N1200A and 1N1200RA



1N1202A, 1N1202RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

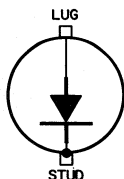
For Industrial and Military Power Supplies

GENERAL DATA

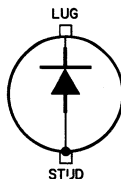
Mechanical:

Operating Position. Any
 Dimensions. See *Dimensional Outline*
 Dimensional Outline JEDEC No. D0-4
 Case. Metal
 Seals Hermetic
 Terminal Diagrams (See *Dimensional Outline*):

Type 1N1202A



Type 1N1202RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	200 max.	volts
TRANSIENT INVERSE VOLTAGE:		
Non-repetitive, for duration of		
5-milliseconds maximum.	350 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
DC BLOCKING VOLTAGE	200 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	12 max.	amp
At other case temperatures. . . See	<i>Average-Forward-Current</i>	
	<i>Rating Chart</i>	
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	240 max.	amp
For one or more cycles. . See	<i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +200	°C

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	2	ma



1N1202A, 1N1202RA

Maximum Thermal Resistance:

Junction-to-case. 2 °C/watt

- ^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.
- ^b At case temperature of 150° C and maximum-rated voltage and average forward current.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N1199A and 1N1199RA also apply to the
1N1202A and 1N1202RA



1N1203A, 1N1203RA

Silicon Rectifiers

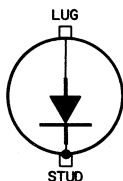
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

GENERAL DATA

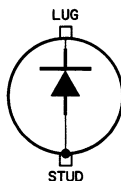
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1203A



Type 1N1203RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	300 max.	volts
TRANSIENT INVERSE VOLTAGE:		
Non-repetitive, for duration of		
5-milliseconds maximum.	450 max.	volts
RMS SUPPLY VOLTAGE.	212 max.	volts
DC BLOCKING VOLTAGE.	300 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	12 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	240 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +200	°C

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	1.75	ma



1N1203A, 1N1203RA

Maximum Thermal Resistance:

Junction-to-case. 2 °C/watt

- ^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.
- ^b At case temperature of 150° C and maximum-rated voltage and average forward current.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N1199A and 1N1199RA also apply to the
1N1203A and 1N1203RA



1N1204A, 1N1204RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

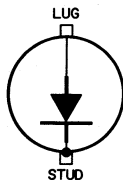
For Industrial and Military Power Supplies

GENERAL DATA

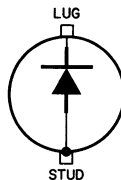
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. D0-4
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1204A



Type 1N1204RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	400 max.	volts
TRANSIENT INVERSE VOLTAGE:		
Non-repetitive, for duration of		
5-milliseconds maximum.	600 max.	volts
RMS SUPPLY VOLTAGE.	284 max.	volts
DC BLOCKING VOLTAGE.	400 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	12 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	240 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +200	°C

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	1.5	ma



RADIO CORPORATION OF AMERICA
Semiconductor & Materials Division
Somerville, N. J.

DATA
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1N1204A, 1N1204RA

Maximum Thermal Resistance:

Junction-to-case. 2 °C/watt

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

^b At case temperature of 150° C and maximum-rated voltage and average forward current.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N1199A and 1N1199RA also apply to the
1N1204A and 1N1204RA



1N1205A, 1N1205RA

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

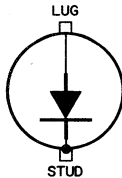
For Industrial and Military Power Supplies

GENERAL DATA

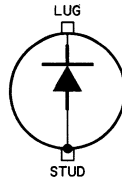
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1205A



Type 1N1205RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	500 max.	volts
TRANSIENT INVERSE VOLTAGE:		
Non-repetitive, for duration of		
5-milliseconds maximum.	700 max.	volts
RMS SUPPLY VOLTAGE.	355 max.	volts
DC BLOCKING VOLTAGE.	500 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	12 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	240 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +200	°C



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1N1205A, 1N1205RA

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	1.25	ma
Maximum Thermal Resistance:		
Junction-to-case.	2	°C/watt

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

^b At case temperature of 150° C and maximum-rated voltage and average forward current.

OPERATING CONSIDERATIONS, DIMENSIONAL OUTLINE, SUGGESTED MOUNTING ARRANGEMENT, RATING CHARTS, and CURVES

shown under Types 1N1199A and 1N1199RA also apply to the
1N1205A and 1N1205RA



1N1206A, 1N1206RA

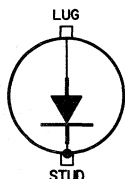
Silicon Rectifiers

DIFFUSED-JUNCTION TYPES For Industrial and Military Power Supplies GENERAL DATA

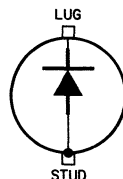
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. DO-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1206A



Type 1N1206RA



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	600 max.	volts
TRANSIENT INVERSE VOLTAGE:		
Non-repetitive, for duration of		
5-milliseconds maximum.	800 max.	volts
RMS SUPPLY VOLTAGE.	424 max.	volts
DC BLOCKING VOLTAGE.	600 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 150° C	12 max.	amp
At other case temperatures	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	50 max.	amp
PEAK SURGE CURRENT: ^a		
For one-half cycle, sine wave	240 max.	amp
For one or more cycles.	See <i>Peak-Surge-Current Rating Chart</i>	
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +200	°C

Characteristics:

Maximum Forward Voltage Drop ^b	0.55	volt
Maximum Reverse Current ^b	1	ma



1N1206A, 1N1206RA

Maximum Thermal Resistance:

Junction-to-case. 2 °C/watt

^a Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

^b At case temperature of 150° C and maximum-rated voltage and average forward current.

**OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHARTS,
and
CURVES**

shown under Types 1N1199A and 1N1199RA also apply to the
1N1206A and 1N1206RA



1N1341B, 1N1342B; 1N1344B to 1N1348B

Silicon Rectifiers, 6-Ampere

Types 1N1341RB, 1N1342RB; 1N1344RB
to 1N1348RB Reverse Polarity Versions

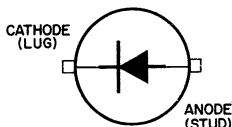
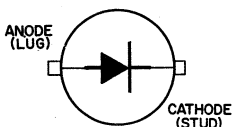
DIFFUSED-JUNCTION TYPES

For Use in DC-to-DC Converters, Power Supplies for DC Motors, Transmitters, RF Generators, Welding Equipment and Electroplating Systems; in Generator-Type Power Supplies for Mobile Equipment; and in DC-Blocking Service and Magnetic Amplifiers, and other Industrial Equipment Applications

Mechanical:

Dimensions. See Outline DO-4 in General Section
Terminal Diagrams:

Reverse polarity version



The arrow indicates direction of forward current as indicated by dc ammeter.

HALF-WAVE RECTIFIER

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

RCA Type	Absolute-Maximum Voltage Ratings			
	Peak Reverse Voltage		RMS Supply Voltage	DC Blocking Voltage
	Repetitive volts	Non-repetitive (Transient) ^a volts		
1N1341B	50	100	35	50
1N1342B	100	200	70	100
1N1344B	200	350	140	200
1N1345B	300	450	212	300
1N1346B	400	600	284	400
1N1347B	500	700	355	500
1N1348B	600	800	424	600

^a For duration of 5-milliseconds maximum at case temperature range of 0° to +200 °C.

^b Superimposed on device operating within the maximum voltage, current, and temperature ratings and may be repeated after sufficient time has elapsed for the device to return to the presurge thermal-equilibrium conditions.

^c Average value for one complete cycle at case temperature of 150 °C and at maximum rated voltage and average forward current.

^d DC value, at maximum peak reverse voltage, and case temperature (°C) = 25.



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Electronic Components and Devices
Harrison, N. J.

DATA
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1N1341B, 1N1342B; 1N1344B to 1N1348B

The following values apply to all the rectifiers shown above
HALF-WAVE RECTIFIER

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

Absolute-Maximum Current Ratings:

Average Forward Current:

At case temperature of 150 °C. 6 max. amp

At other case temperatures . . . See *Average-Forward-Current Rating Chart*

Peak Recurrent Current 25 max. amp

Peak Surge Current^b

For one-half sine wave 160 max. amp

Case-Temperature Range

Operating and storage. -65 to +200 °C

Characteristics:

Max. Forward Voltage Drop^c 0.65 volt

Max. Reverse Current:

Dynamic^c 0.45 ma

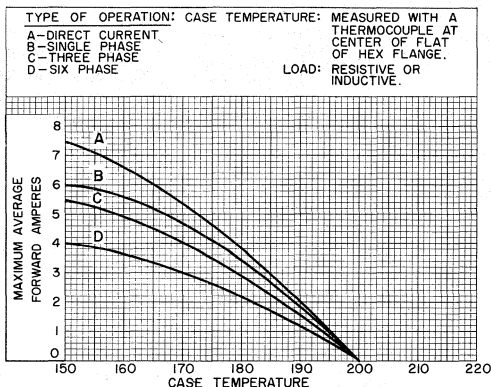
Static^d. 0.004 ma

SUGGESTED MOUNTING ARRANGEMENT

For mounting arrangement illustration see type 1N199A

Mounting components of the type shown are furnished with each rectifier cell. The increase in thermal resistance with these mounting components is approximately 3 °C/watt.

Average-Forward-Current Rating Chart



92CS-11065R2

RADIO CORPORATION OF AMERICA
Electronic Components and Devices

Harrison, N. J.



1N1612, 1N1612R

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

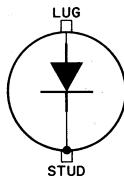
For Industrial and Military Power Supplies

GENERAL DATA

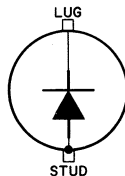
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. DO-4
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1612



Type 1N1612R



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	50 max.	volts
RMS SUPPLY VOLTAGE.	35 max.	volts
DC BLOCKING VOLTAGE	50 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 135° C	5 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	15 max.	amp
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +175	°C

Characteristics:

Maximum Forward Voltage Drop for dc forward amperes = 10, case temperature (°C) = 25	1.5	volts
Maximum Reverse Current:		
Dynamic (Averaged over one complete cycle for maximum peak-reverse volts = 50, dc forward amperes = 5, case temperature (°C) = 150).	1	ma
Static (DC value for maximum peak-reverse volts = 50, case temperature (°C) = 25)	0.01	ma



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Semiconductor & Materials Division
Somerville, N. J.

DATA 1
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1N1612, 1N1612R

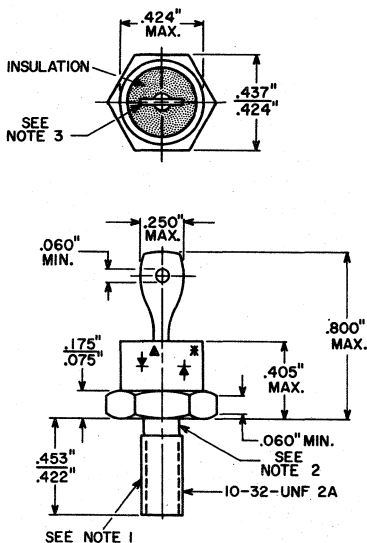
OPERATING CONSIDERATIONS

Because these rectifiers may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier.

The recommended installation torque is 15 to 20 inch-pounds applied to a 10-32 UNF-2B hex nut assembled on stud thread.

The applied torque during installation should not exceed 25 inch-pounds.

JEDEC No.D0-4



92CS-11070R1

NOTE 1: NORMAL INSTALLATION TORQUE IS 15 TO 20 INCH-POUNDS APPLIED TO A 10-32 UNF-2B HEX NUT ASSEMBLED ON STUD THREADS. UNDER NO CIRCUMSTANCES SHOULD THIS VALUE EXCEED 25 INCH-POUNDS.

NOTE 2: DIAMETER OF UNTHREADED PORTION: 0.189" MAXIMUM, 0.163" MINIMUM.

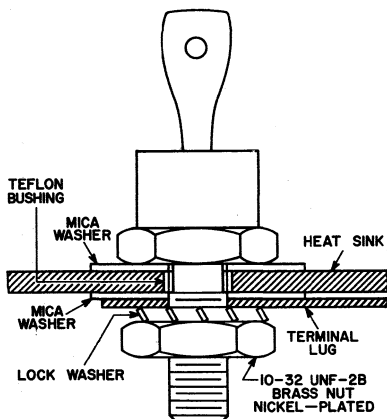
NOTE 3: ANGULAR ORIENTATION OF THIS TERMINAL UNDEFINED.

▲ Polarity symbol for types 1N1612, 1N1613, 1N1614, 1N1615, and 1N1616.

* Polarity symbol for types 1N1612R, 1N1613R, 1N1614R, 1N1615R, and 1N1616R.

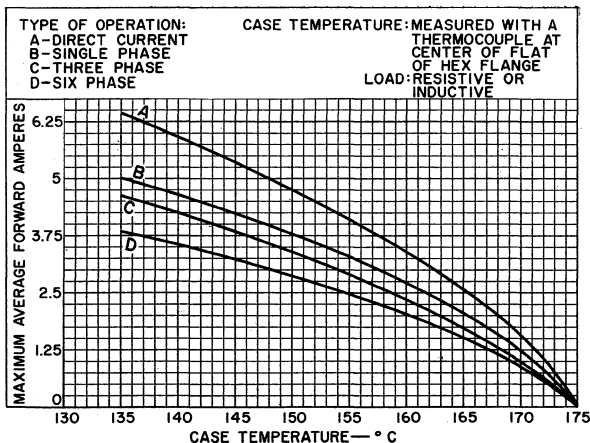
1N1612, 1N1612R

SUGGESTED MOUNTING ARRANGEMENT



92CS-11072R1

AVERAGE-FORWARD-CURRENT RATING CHART



92CS-11295

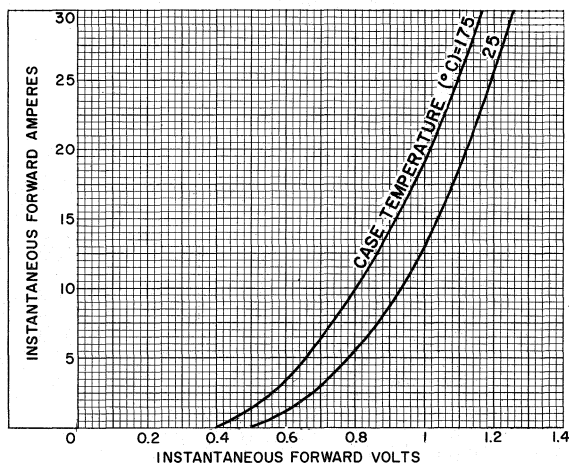


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DATA 2
 8-61

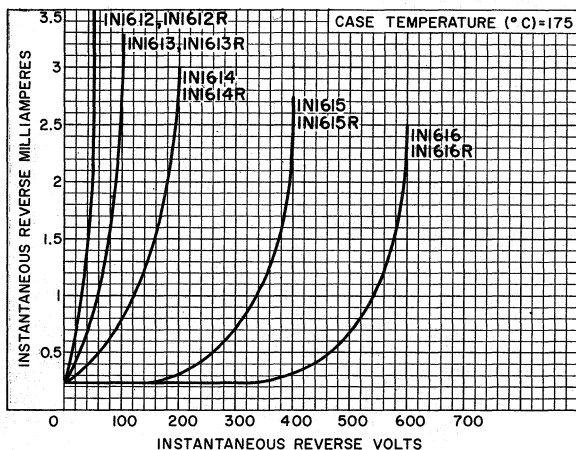
1N1612, 1N1612R

TYPICAL FORWARD CHARACTERISTICS



92CS-11296

TYPICAL REVERSE CHARACTERISTICS



92CS-11297



1N1613, 1N1613R

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

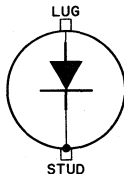
For Industrial and Military Power Supplies

GENERAL DATA

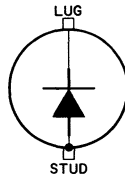
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline JEDEC No. D0-4
Case. Metal
Seals Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1613



Type 1N1613R



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	100 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts
DC BLOCKING VOLTAGE	100 max.	volts
AVERAGE FORWARD CURRENT:		
At case temperature of 135° C	5 max.	amp
At other case temperatures.	See <i>Average-Forward-Current Rating Chart</i>	
PEAK RECURRENT CURRENT.	15 max.	amp
CASE-TEMPERATURE RANGE:		
Operating and storage	-65 to +175	°C

Characteristics:

Maximum Forward Voltage Drop for dc forward amperes = 10, case temperature (°C) = 25.	1.5	volts
Maximum Reverse Current:		
Dynamic (Averaged over one complete cycle for maximum peak-reverse volts = 100, dc forward amperes = 5, case temperature (°C) = 150)	1	ma
Static (DC value for maximum peak-reverse volts = 100, case temperature (°C) = 25).	0.01	ma



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DATA
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1N1613, 1N1613R

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHART,
and
CURVES

shown under Types 1N1612 and 1N1612R also apply to the
1N1613 and 1N1613R



Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

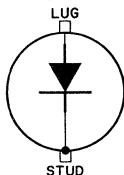
For Industrial and Military Power Supplies

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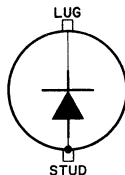
Mechanical:

Operating Position. Any
 Dimensions. See *Dimensional Outline*
 Dimensional Outline JEDEC No.D0-4
 Case. Metal
 Seals Hermetic
 Terminal Diagrams (See *Dimensional Outline*):

Type 1N1614



Type 1N1614R



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	200 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
DC BLOCKING VOLTAGE.	200 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 135° C	5 max.	amp
At other case temperatures. . . See <i>Average-Forward-Current Rating Chart</i>		

PEAK RECURRENT CURRENT.	15 max.	amp
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CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

Maximum Forward Voltage Drop for dc forward amperes = 10, case temperature (°C) = 25 . .	1.5	volts
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Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak-reverse volts = 200, dc forward amperes = 5, case temperature (°C) = 150)	1	ma
Static (DC value for maximum peak-reverse volts = 200, case temperature (°C) = 25)	0.01	ma



1N1614, 1N1614R

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHART,
and
CURVES

shown under Types 1N1612 and 1N1612R also apply to the
1N1614 and 1N1614R



1N1615, 1N1615R

Silicon Rectifiers

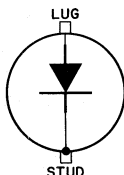
DIFFUSED-JUNCTION TYPES
For Industrial and Military Power Supplies

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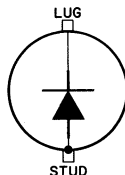
Mechanical:

Operating Position. Any
Dimensions. See *Dimensional Outline*
Dimensional Outline. JEDEC No. D0-4
Case. Metal
Seals. Hermetic
Terminal Diagrams (See *Dimensional Outline*):

Type 1N1615



Type 1N1615R



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE. 400 max. volts
RMS SUPPLY VOLTAGE. 280 max. volts
DC BLOCKING VOLTAGE. 400 max. volts

AVERAGE FORWARD CURRENT:

At case temperature of 135° C 5 max. amp
At other case temperatures. . . See *Average-Forward-Current Rating Chart*

PEAK RECURRENT CURRENT. 15 max. amp

CASE-TEMPERATURE RANGE:

Operating and storage -65 to +175 °C

Characteristics:

Maximum Forward Voltage Drop for dc forward amperes = 10, case temperature (°C) = 25. 1.5 volts

Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak-reverse volts = 400, dc forward amperes = 5, case temperature (°C) = 150) 1 ma

Static (DC value for maximum peak-reverse volts = 400, case temperature (°C) = 25) 0.01 ma



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Semiconductor & Materials Division Somerville, N. J.

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1N1615, 1N1615R

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHART,
and
CURVES

shown under Types 1N1612 and 1N1612R also apply to the
1N1615 and 1N1615R



Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

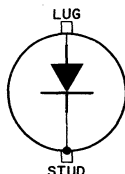
For Industrial and Military Power Supplies

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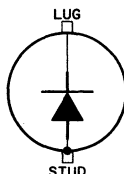
Mechanical:

Operating Position. Any
 Dimensions. See *Dimensional Outline*
 Dimensional Outline JEDEC No. DO-4
 Case. Metal
 Seals Hermetic
 Terminal Diagrams (See *Dimensional Outline*):

Type 1N1616



Type 1N1616R



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps, single-phase operation, and with resistive or inductive load

PEAK INVERSE VOLTAGE.	600 max.	volts
RMS SUPPLY VOLTAGE.	420 max.	volts
DC BLOCKING VOLTAGE	600 max.	volts

AVERAGE FORWARD CURRENT:

At case temperature of 135° C	5 max.	amp
At other case temperatures. . . See <i>Average-Forward-Current</i>		

Rating Chart

PEAK RECURRENT CURRENT.	15 max.	amp
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CASE-TEMPERATURE RANGE:

Operating and storage	-65 to +175	°C
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Characteristics:

Maximum Forward Voltage Drop for dc forward amperes = 10, case temperature (°C) = 25.	1.5	volts
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Maximum Reverse Current:

Dynamic (Averaged over one complete cycle for maximum peak-reverse volts = 600, dc forward amperes = 5, case temperature (°C) = 150)	1	ma
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Static (DC value for maximum peak-reverse volts = 600, case temperature (°C) = 25) .	0.01	ma
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 Semiconductor & Materials Division Somerville, N. J.

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1N1616, 1N1616R

OPERATING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
SUGGESTED MOUNTING ARRANGEMENT,
RATING CHART,
and
CURVES

shown under Types 1N1612 and 1N1612R also apply to the
1N1616 and 1N1616R



1N1763A, 1N1764A

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

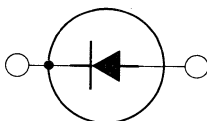
FLANGED CASE

AXIAL LEAD

For Use in Power Supplies of Color and Black-&-White TV Receivers, Radio Receivers, Phonographs, Hi-Fi Amplifier Systems and Other Electronic Equipment for Commercial and Industrial Applications

Dimensions See Outline DO-1 in General Section
Terminal Diagram

Cathode



Anode

The arrow indicates direction of forward current as indicated by dc ammeter

RECTIFIER SERVICE

Absolute-Maximum Ratings

For power-supply frequency of 60 c/s

		1N1763A	1N1764A	
Peak Reverse Voltage	PRV	400	500	V
RMS Supply Voltage				
Resistive or inductive load. . .	V_{RMS}	280	350	V
Capacitive load.	V_{RMS}	140	175	V
Forward Current				
RESISTIVE or INDUCTIVE LOAD				
At $T_{FA} = -65$ to 75°C :				
Average (DC)	I_F	I	I	A
CAPACITIVE LOAD				
At $T_{FA} = -65$ to 75°C :				
Average (DC)	I_F	0.75	0.75	A
Peak Recurrent	i_{PR}	5	5	A
Surge (2 ms "turn-on" transient)	i_S	35	35	A
Above $T_{FA} = 75^{\circ}\text{C}$	See Forward-Current Rating Chart			
Temperature Range (Free-Air)				
Operating.	T_{opr}	-65 to 135		$^{\circ}\text{C}$
Storage.	T_{stg}	-65 to 150		$^{\circ}\text{C}$

Characteristics

	1N1763A	1N1764A	
Max Instantaneous Forward Voltage Drop	1.2	1.2	V
$T_{FA} = 25^{\circ}\text{C}$, $I_F = 1$ A			
Max DC Reverse Current			
$T_{FA} = 25^{\circ}\text{C}$:			
PRV = 400 V.	5	-	μA
PRV = 500 V.	-	5	μA
$T_{FA} = 75^{\circ}\text{C}$:			
PRV = 400.	0.1	-	mA
PRV = 500.	-	0.1	mA



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Electronic Components and Devices
Harrison, N. J.

DATA 1
7-65

1N1763A, 1N1764A

TYPICAL PERFORMANCE CHARACTERISTICS

Free-air temperature = 25°C

Conditions for Services Given Below

	1N1763A			1N1764A			
RMS Supply Voltage	117	117	117	150	150	150	V
Filter-Input Capacitor	100	200	350	100	200	350	μF
Surge-Limiting Resistance ^a	5.6	5.6	5.6	6.8	6.8	6.8	Ω

Half-Wave Rectifier Service

DC Output Voltage (Approx.)

At Input to Filter:

For mA = 375 (half-load) 140 145 150 180 185 190 V

For mA = 750 (full-load) 125 130 140 155 160 170 V

Voltage Regulation (Approx.) . . . 15 15 10 25 25 20 V

Half-load to full-load current

Half-Wave Voltage-Doubler Service

DC Output Voltage (Approx.)

At Input to Filter:

For mA = 375 (half-load) 255 265 275 325 340 350 V

For mA = 750 (full-load) 225 240 255 285 305 325 V

Voltage Regulation (Approx.) . . . 30 25 20 40 35 25 V

Half load to full-load current

Full-Wave Voltage-Doubler Service

DC Output Voltage (Approx.)

At Input to Filter:

For mA = 375 (half-load) 275 280 290 350 355 365 V

For mA = 750 (full-load) 250 260 275 320 330 345 V

Voltage Regulation (Approx.) . . . 25 20 15 30 25 20 V

Half-load to full-load current

^a The transformer series resistance or other resistances in the rectifier supply circuit may be deducted from the given value.



OPERATING CONSIDERATIONS

Maximum ratings for these devices have been established with connections made to the extreme ends of the leads. For conservative equipment designs, the 1N1763A and 1N1764A should be operated with connections made as close as possible to the device case.

The Maximum Forward Current Ratings apply specifically for operation of these rectifiers in free air (natural convection cooling). The rectifiers can, however, provide Average (DC) Forward Currents of up to 2 amperes with capacitive load if these rectifiers are attached to simple heat sinks. The Peak Recurrent Forward Current capabilities of these rectifiers are also substantially higher than those shown in the Maximum Ratings when the rectifiers are attached to heat sinks.

Two suggested methods for attaching the rectifiers to a heat sink are shown under Types 1N2858A to 1N2864A. The flange of the rectifier case may also be soldered directly to a heat sink, provided the flange temperature during soldering does not exceed 235°C for a maximum period of 10 seconds. Permanent damage to the rectifier may result if these limits are exceeded.

A surge-limiting impedance should always be used in series with either the 1N1763A or 1N1764A rectifier. The value of this impedance must be sufficient to limit the "turn-on" surge current to the value specified in the Maximum Ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

Because the cases of these rectifiers may operate at potentials which are dangerous, care should be taken in the design of equipment to prevent personnel from coming in contact with the rectifiers. It is recommended that these rectifiers be mounted on the under side of the equipment chassis.

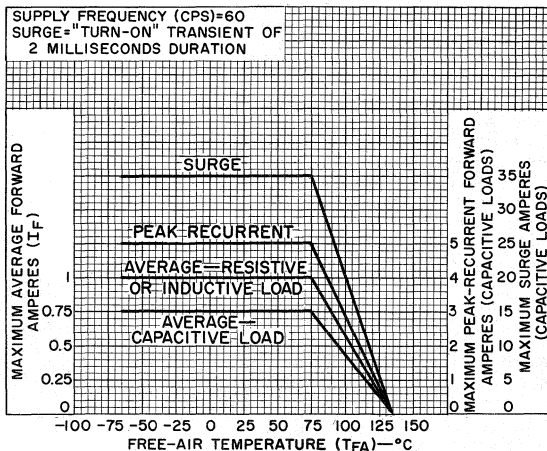
The solid portions of the *Typical Operation Characteristics* curves extend to the maximum dc forward current values given in the *maximum ratings*. The dashed portions of the curves show typical performance at the higher current values permissible when the rectifiers are attached to heat sinks.

It is important to note that the amount of ac ripple present in the output of any of the rectifier circuits shown increases rapidly with increasing load currents. If operation is intended at the maximum current values shown on the dashed portions of the curves, it will generally be necessary to include additional filter circuits to achieve satisfactory hum levels.

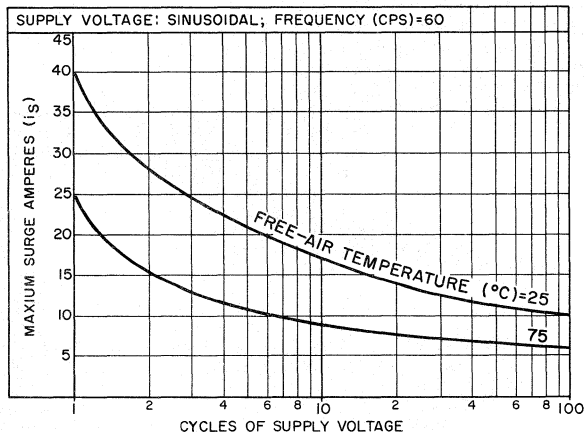
For Suggested Methods for Attaching Rectifier to Heat Sink, see Types 1N2858A to 1N2864A



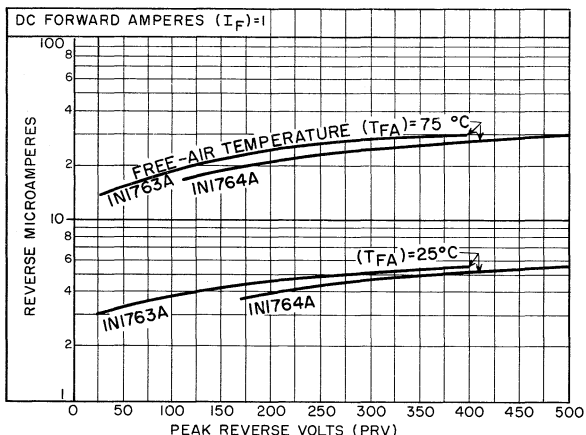
Forward-Current Rating Chart



Repetitive Surge-Current Rating Chart

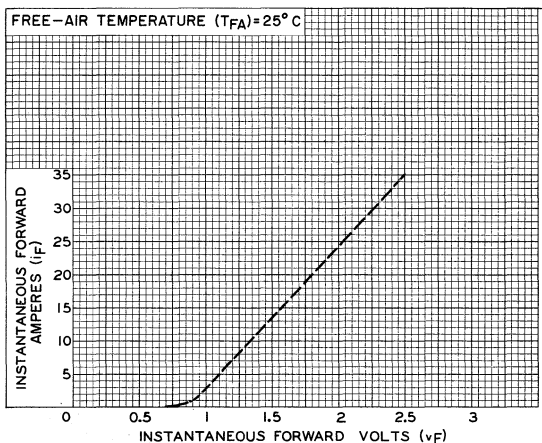


Typical Dynamic Reverse Characteristics



92CS-13080

Typical Forward Voltage and Current Characteristic



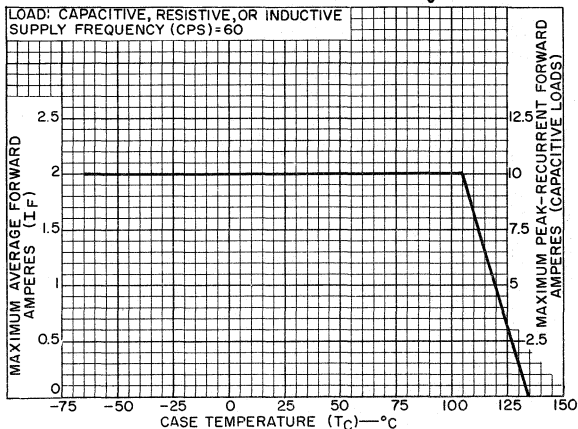
92CS-9730R3



1N1763A, 1N1764A

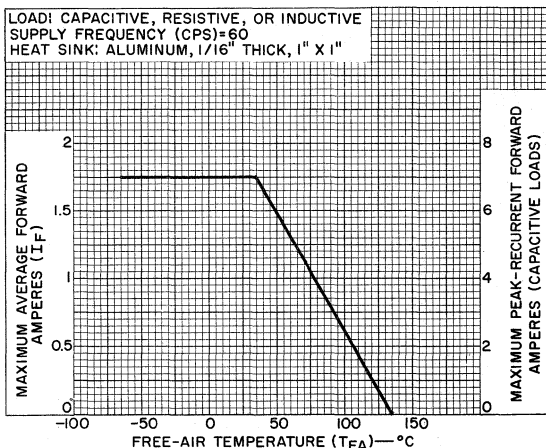
Forward-Current Capabilities

OPERATION WITH HEAT SINK AT T_C



92CS-13083

OPERATION WITH 1" x 1" HEAT SINK AT T_{FA}

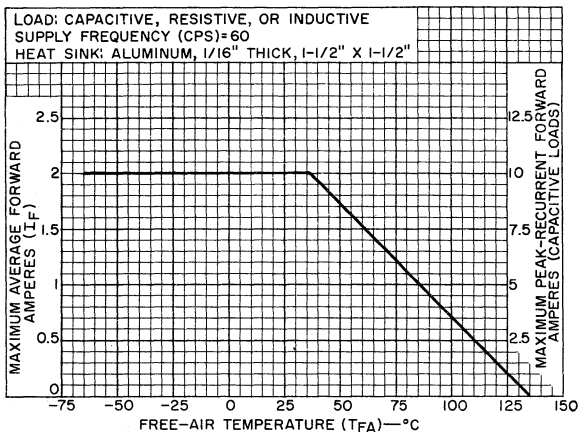


92CS-13089



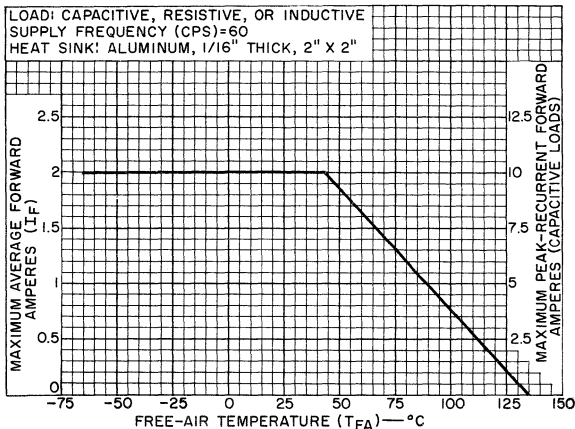
Forward Current Capabilities

OPERATION WITH 1-1/2" x 1-1/2" HEAT SINK AT T_{FA}



92CS-13082

OPERATION WITH 2" x 2" HEAT SINK AT T_{FA}



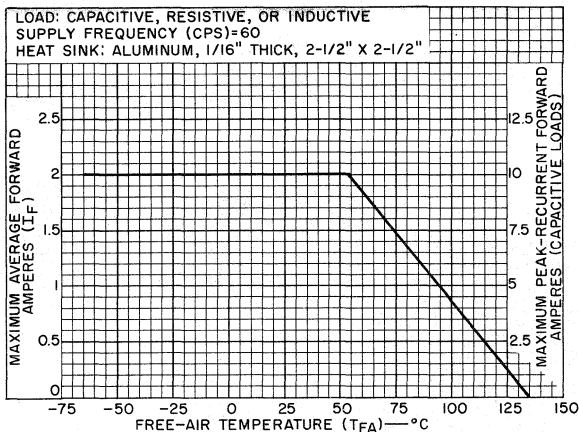
92CS-13084



1N1763A, 1N1764A

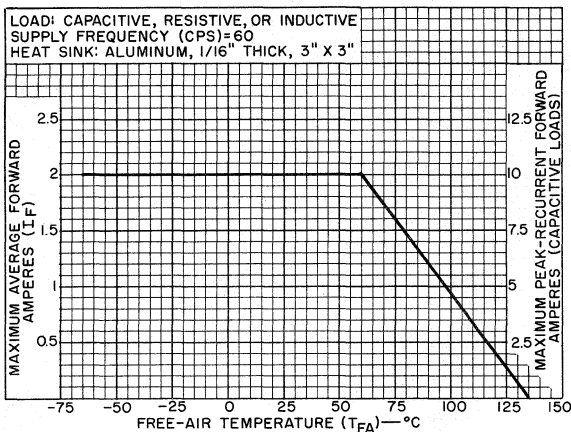
Forward-Current Capabilities

OPERATION WITH 2-1/2" x 2-1/2" HEAT SINK AT T_{FA}



92CS-13086

OPERATION WITH 3" x 3" HEAT SINK AT T_{FA}

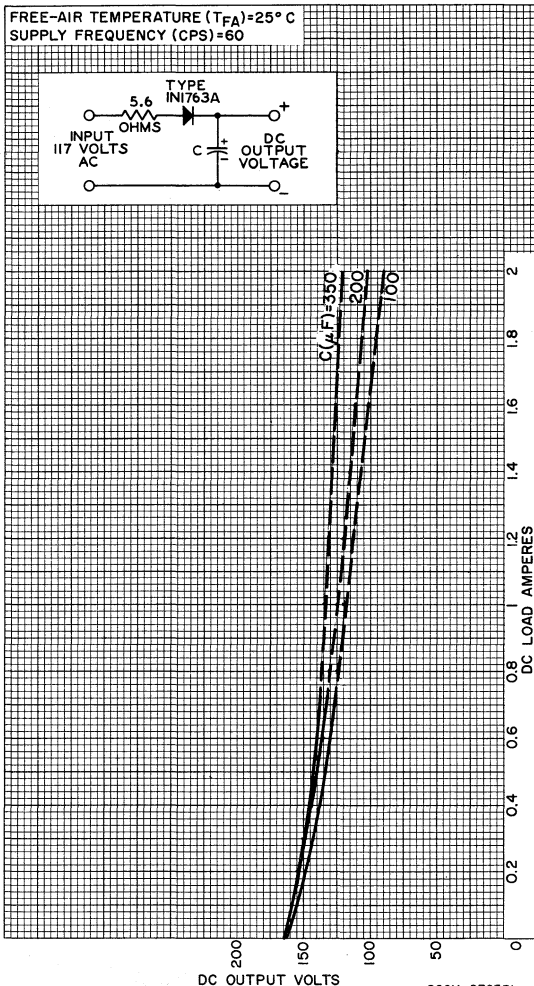


92CS-13085



1N1763A, 1N1764A

Typical Operation Characteristics HALF-WAVE RECTIFIER SERVICE



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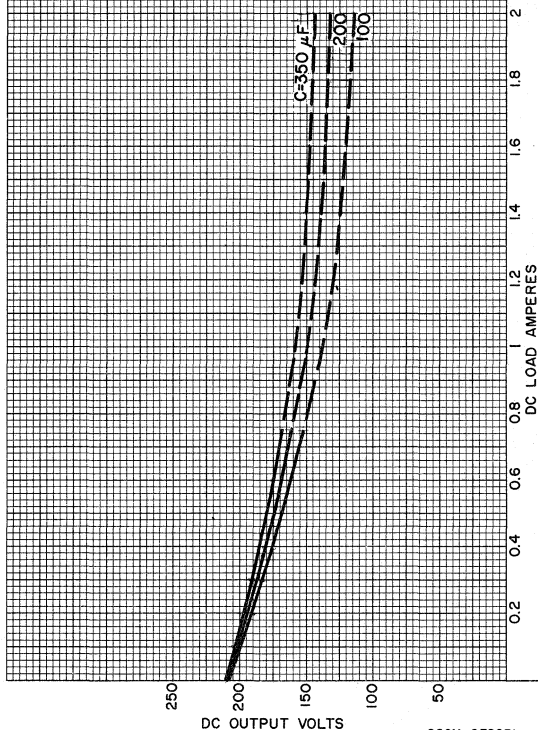
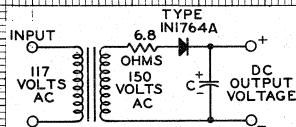
DATA 5
7-65

1N1763A, 1N1764A

Typical Operation Characteristics

HALF-WAVE RECTIFIER SERVICE

FREE-AIR TEMPERATURE (T_{FA}) = 25° C
SUPPLY FREQUENCY (CPS) = 60



92CM-9722RI

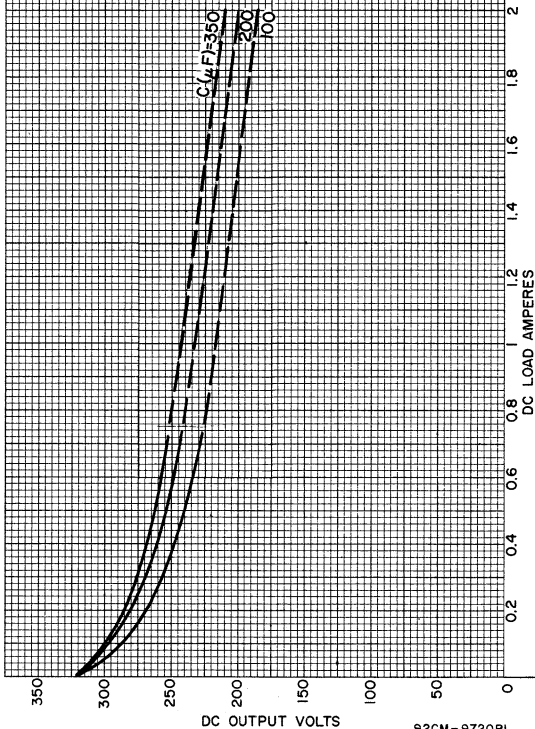
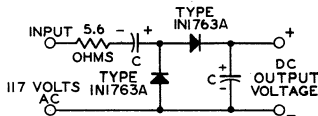


1N1763A, 1N1764A

Typical Operation Characteristics

HALF-WAVE VOLTAGE-DOUBLER SERVICE

FREE-AIR TEMPERATURE (T_{FA}) = 25° C
SUPPLY FREQUENCY (CPS) = 60



92CM-9720RI



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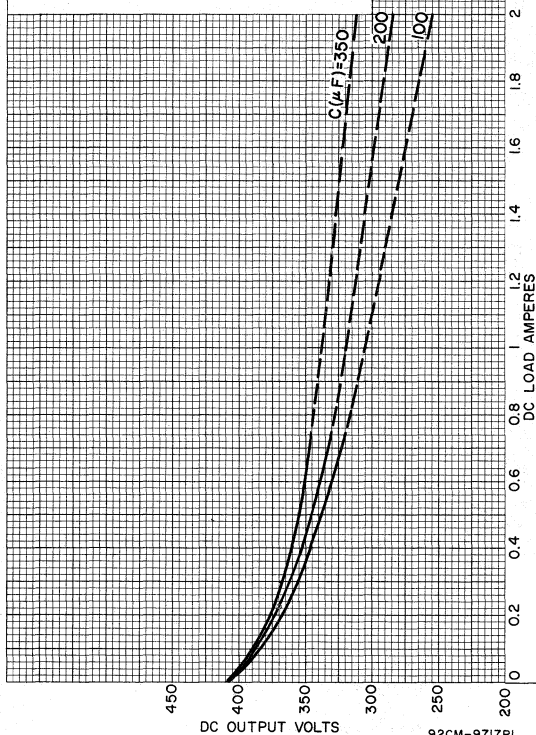
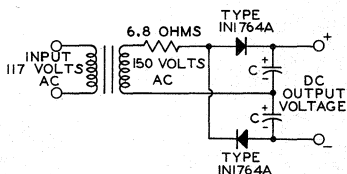
DATA 6
7-65

1N1763A, 1N1764A

Typical Operation Characteristics

FULL-WAVE VOLTAGE-DOUBLER SERVICE

FREE-AIR TEMPERATURE (T_{FA}) = 25° C
SUPPLY FREQUENCY (CPS) = 60



92CM-9717RI



Semiconductor Diode

GERMANIUM-ALLOY TYPE

For Temperature- and Voltage-Compensation Applications

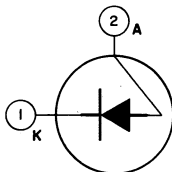
Mechanical:

Dimensions. Similar to Outline TO-1 in General Section
except that lead 3 is omitted

Terminal Diagram

BOTTOM VIEW

Lead 1 - Cathode
(Color dot adjacent
to cathode lead)
Lead 2 - Anode



The arrow indicates direction of forward (easy)
current flow as indicated by dc ammeter.

TEMPERATURE- AND VOLTAGE-COMPENSATION SERVICE

Maximum Ratings, Absolute-Maximum Values:

Reverse Voltage ^a	-1 max.	volt
Peak Recurrent Current.	200 max.	ma
DC Forward Current.	100 max.	ma
Temperature		
Operating range	T_{opr} -65 to 85	°C
Storage range	T_{stg} -65 to 85	°C
Leads, for 10 seconds maximum . . .	T_L 255 max.	°C

Characteristics:

Free-air temperature = 25° C

	Min.	Typ.	Max.	
Forward Voltage Drop ^b for dc forward current =				
2 ma.	120	135	150	mv
100 ma.	240	260	280	mv

^a This semiconductor diode is not intended for operation with reverse voltages.

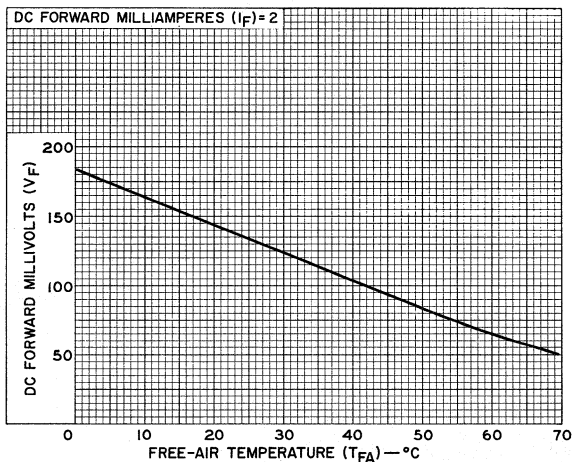
^b Measured under conditions of thermal equilibrium.

← Indicates a change.

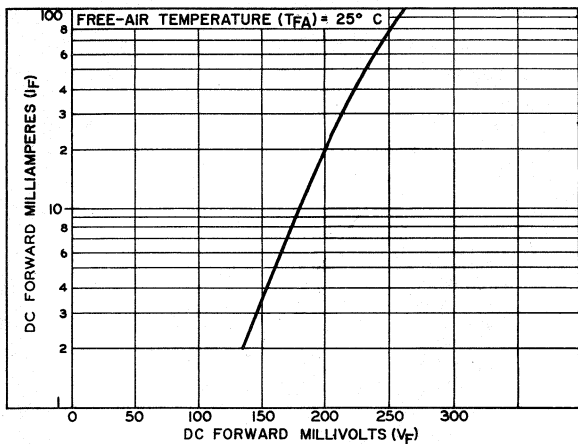


1N2326

Typical Characteristics



92CS-10140RI



92CS-10141R2



1N2858A to 1N2864A

Silicon Rectifiers

DIFFUSED-JUNCTION TYPES

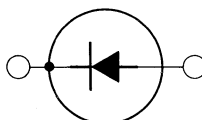
FLANGED CASE

AXIAL LEAD

*For General-Purpose Applications in
Industrial and Commercial Electronic Equipment*

Dimensions. See Outline DO-1 in General Section
Terminal Diagram

Cathode



Anode

*The arrow indicates direction of
forward current as indicated by dc ammeter*

RECTIFIER SERVICE

*For power-supply frequency of 60 c/s; and a free-air
temperature range: $T_{opr} = -65$ to 135° C, $T_{stg} = -65$ to 150° C*

Absolute-Maximum Voltage Ratings

RCA Type	Peak Reverse Volts (PRV)	RMS Supply Volts (VRMS)		DC Reverse (Blocking) Volts
		Load		
		Resistive or Inductive	Capacitive	
1N2858A	50	35	17	50
1N2859A	100	70	35	100
1N2860A	200	140	70	200
1N2861A	300	210	105	300
1N2862A	400	280	140	400
1N2863A	500	350	175	500
1N2864A	600	420	210	600

Absolute-Maximum Current Ratings

The following values apply to all the above rectifiers

*Resistive or Capacitive
Inductive Load Load*

Forward Current

At $T_{FA} = -65$ to 75° C:

Average (DC). I_F 1 0.75 A

Peak recurrent. i_{PR} - 5 A

Surge (2 ms "turn-on"
transient). i_S - 35 A

Above $T_{FA} = 75^{\circ}$ C. - a

At $T_{FA} = 25^{\circ}$ C:

Surge:

1 c/s of supply
voltage. - 40 A

Over 1 c/s of supply
voltage (repetitive). - b



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DATA 1
7-65

IN2858A to IN2864A

CHARACTERISTICS

The following values apply to all the above rectifiers

Max. DC Forward Voltage Drop. 1.2 V

T_{FA} = 25° C, I_F = 1 A

Max. Dynamic Reverse Current

Averaged Over 1 Complete c/s

Supply Voltage at Max. Rated PRV:

T_{FA} = 50° C 0.1 mA

T_{FA} = 75° C 0.3 mA

^a See Forward-Current Rating Chart.

^b See Repetitive Surge Current Rating Chart.

OPERATING CONSIDERATIONS

Maximum ratings for these devices have been established with connections made to the extreme ends of the leads. For conservative equipment designs, the IN2858A through IN2864A should be operated with connections made as close as possible to the device case.

The Maximum Forward Current Ratings apply specifically for operation of these rectifiers in free air (natural convection cooling). The rectifiers can, however, provide Average (DC) Forward Currents of up to 2 amperes with capacitive load if they are attached to simple heat sinks. The Peak Recurrent Forward Current capabilities of these rectifiers are also substantially higher than those shown in the Maximum Ratings when the rectifiers are attached to heat sinks.

Two suggested methods for attaching the rectifiers to a heat sink are shown in the accompanying drawings. The flanges of these rectifiers may also be soldered directly to heat sinks, provided the flange temperature during soldering does not exceed 235° C for a maximum period of 10 seconds. Permanent damage to the rectifier may result if these limits are exceeded.

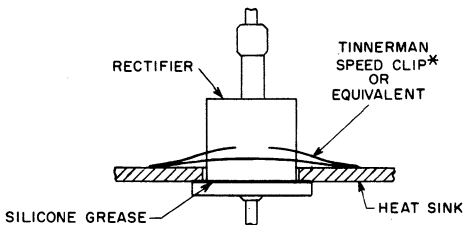
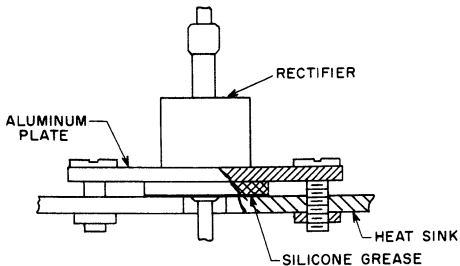
A surge-limiting impedance should always be used in series with any of the rectifiers described above. The value of this impedance must be sufficient to limit the "turn-on" surge current to the value specified in the Maximum Ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

Because the cases of these rectifiers may operate at potentials which are dangerous, care should be taken in the design of equipment to prevent personnel from coming in contact with the rectifiers. It is recommended that these rectifiers be mounted on the under side of the equipment chassis.



1N2858A to 1N2864A

SUGGESTED METHODS FOR ATTACHING RECTIFIERS TO HEAT SINK



92CS-13090

* Registered Trade Mark, Tinnerman Products, Inc.,
Cleveland 1, Ohio.



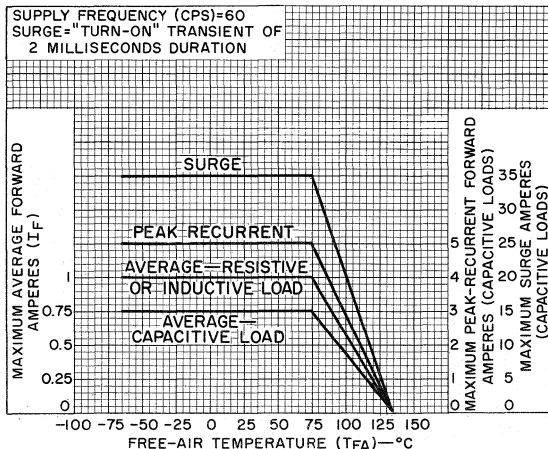
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Electronic Components and Devices

Harrison, N. J.

DATA 2
7-65

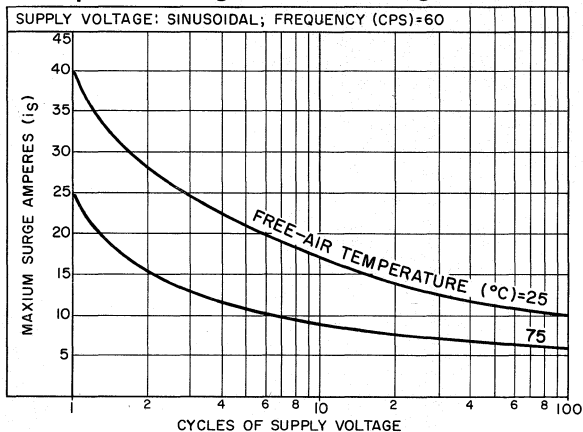
1N2858A to 1N2864A

Forward-Current Rating Chart



92CS-13087

Repetitive Surge Current Rating Chart

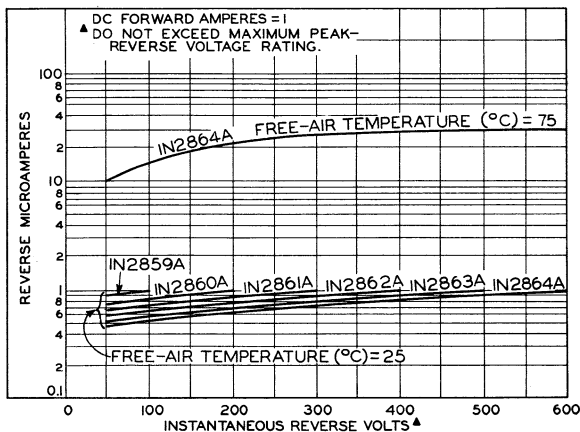


92CS-13081



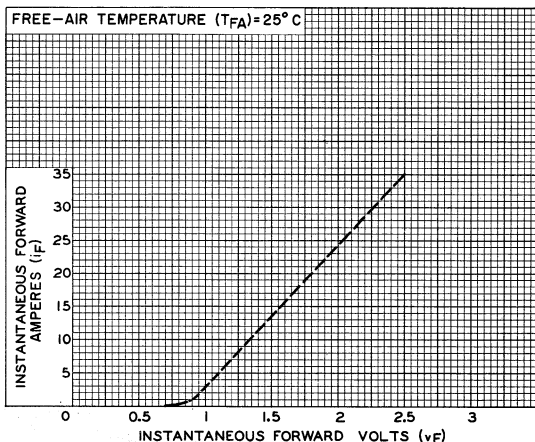
1N2858A to 1N2864A

Typical Dynamic Reverse Characteristics



92CS-10477RI

Typical Forward Voltage and Current Characteristic



92CS-9730R3



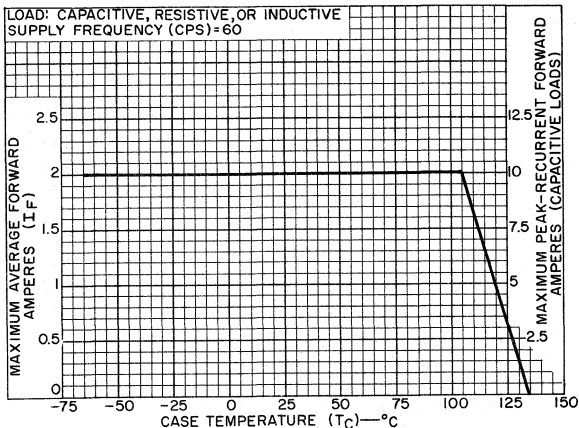
RADIO CORPORATION OF AMERICA
 Electronic Components and Devices
 Harrison, N. J.

DATA 3
 7-65

1N2858A to 1N2864A

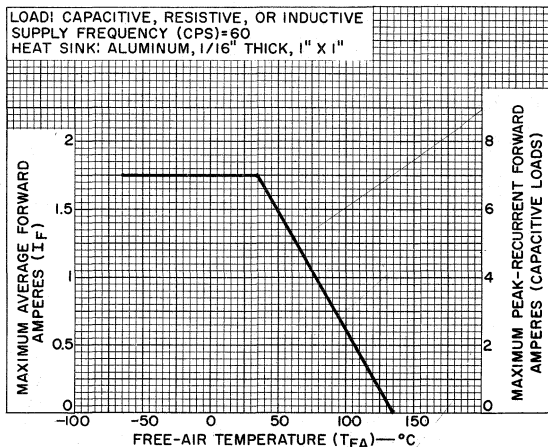
Forward-Current Capabilities

OPERATION WITH HEAT SINK AT T_C



92CS-13083

OPERATION WITH 1" x 1" HEAT SINK AT T_{FA}



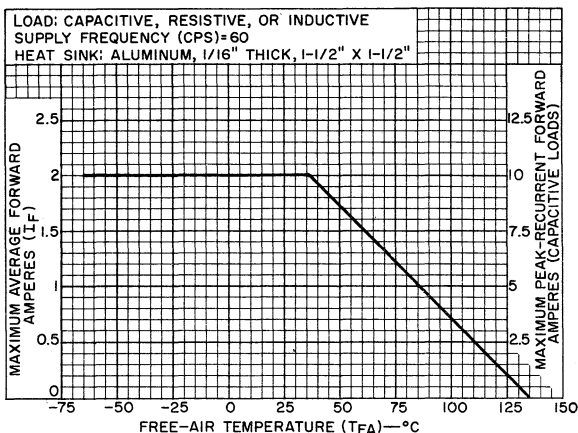
92CS-13089



1N2858A to 1N2864A

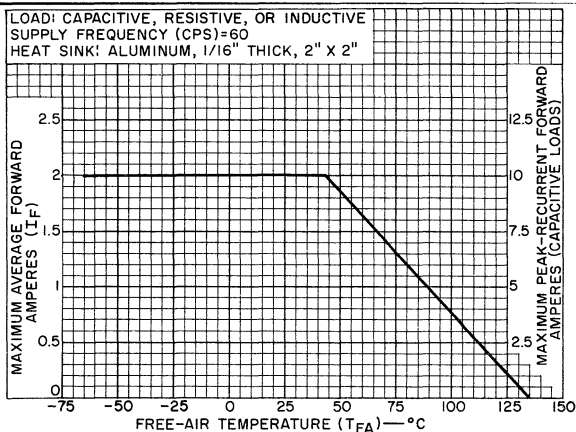
Forward-Current Capabilities

OPERATION WITH 1-1/2" x 1-1/2" HEAT SINK AT T_{FA}



92CS-13082

OPERATION WITH 2" x 2" HEAT SINK AT T_{FA}



92CS-13084



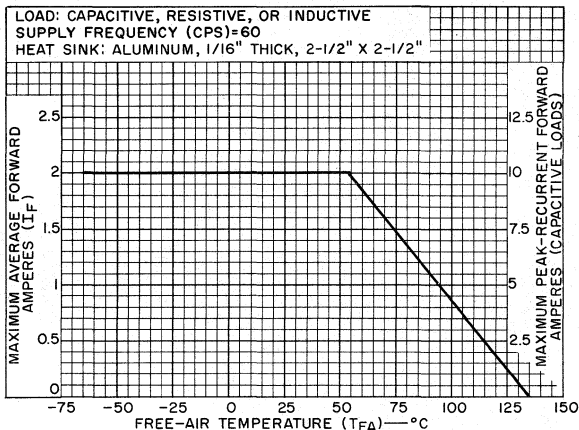
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Electronic Components and Devices Harrison, N. J.

DATA 4
7-65

1N2858A to 1N2864A

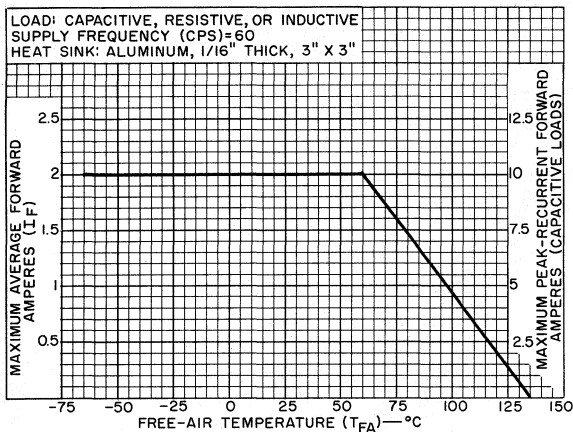
Forward-Current Capabilities

OPERATION WITH 2-1/2" x 2-1/2" HEAT SINK AT T_{FA}



92CS-13086

OPERATION WITH 3" x 3" HEAT SINK AT T_{FA}



92CS-13085



Tunnel Diode

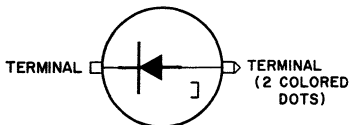
GERMANIUM TYPE

A Low-Current Type for Applications Employing Clock
(Pulse-Repetition) Rates up to 100 Mc with Typical
Switching Times of 2 Millimicroseconds or Less

GENERAL DATA

Mechanical:

Operating Position. Any
Maximum Overall Length. 0.265"
Maximum Width. 0.140"
Maximum Height. 0.055"
Case. Metal and Ceramic
Colored Dots for Device Identification
(See *Dimensional Outline*). Red and Gray
Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward
current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values: ←

DC CURRENT at free-air temperature of 25° C:

Forward.	I_F	40 max.	ma
Reverse.	I_R	70 max.	ma

DISSIPATION:^a

At free-air temperature of 25° C	P	20 max.	mW
--	---	---------	----

FREE-AIR TEMPERATURE RANGE:

Operating.	T_{OPR}	-35 to +100	°C
Storage.	T_{STG}	-35 to +100	°C

CASE TEMPERATURE:

For 10 seconds maximum	T_C	230 max.	°C
----------------------------------	-------	----------	----

Electrical Characteristics: ←

At free-air temperature of 25° C

Min. Max.

Static:^b

Peak-Point Current	I_P	4.75	5.25	ma
Valley-Point Current	I_V	-	0.6	ma
Peak-Point-to-Valley-Point Current Ratio.	I_P/I_V	8/1	-	
Peak-Point Voltage	V_P	40	80	mv

← Indicates a change.



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Semiconductor & Materials Division Somerville, N. J.

DATA 1
4-62

1N3128

		Min.	Max.	
Valley-Point Voltage.	V_V	280	—	mv
Positive Voltage at peak-point ma. = 5.25.	V_F'	445	530	mv
<i>Dynamic:</i> ^c				
Terminal Valley-Point Capacitance ^d . .	C	—	15	$\mu\mu\text{f}$
Total Series Inductance	L_S	—	0.6	m μh
Total Series Resistance	R_S	—	3	ohms

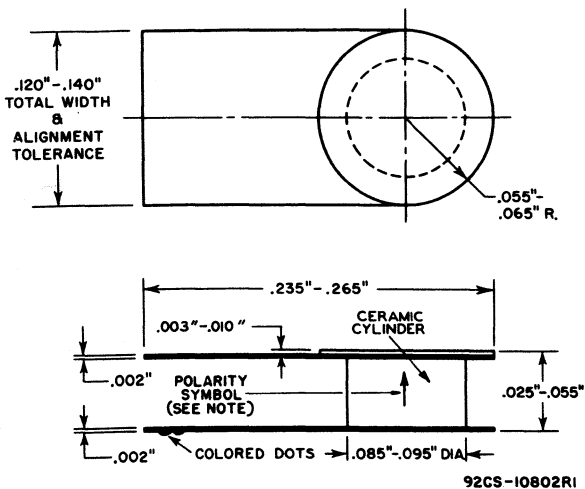
^a Derate linearly to 0 milliwatts at 100° C.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d At measured I_V for individual diode and includes case capacitance of 0.3 $\mu\mu\text{f}$.

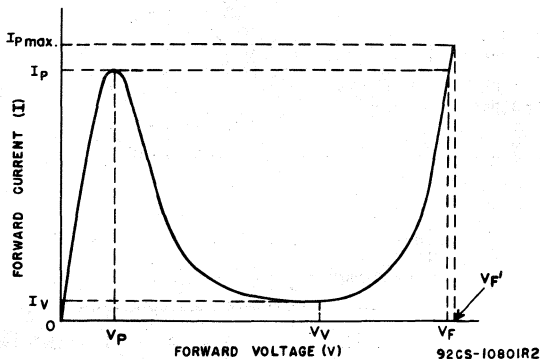




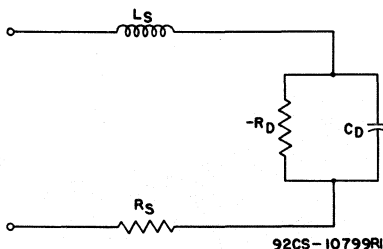
NOTE: ARROW INDICATES DIRECTION OF FORWARD CURRENT FLOW AS INDICATED BY DC AMMETER.



STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE



EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION



- L_s = TOTAL SERIES INDUCTANCE
- R_s = TOTAL SERIES RESISTANCE
- $-R_D$ = NEGATIVE RESISTANCE OF INTRINSIC DIODE
- C_D = BARRIER CAPACITANCE OF INTRINSIC DIODE

Tunnel Diode

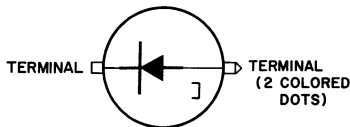
GERMANIUM TYPE

An Intermediate-Speed Type for Applications Employing
Clock (Pulse-Repetition) Rates up to 500 Mc with
Typical Switching Times of 1/2 Millimicrosecond or Less

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.265"
Maximum Width.	0.140"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Colored Dots for Device Identification (See <i>Dimensional Outline</i>).	Red and White
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values: ←

DC CURRENT at free-air temperature of 25° C:

Forward.	I_F	55 max.	ma
Reverse.	I_R	85 max.	ma

DISSIPATION:^a

At free-air temperature of 25° C	P	30 max.	mw
--	---	---------	----

FREE-AIR TEMPERATURE RANGE:

Operating.	T_{OPR}	-35 to +100	°C
Storage.	T_{STG}	-35 to +100	°C

CASE TEMPERATURE:

For 10 seconds maximum	T_C	230 max.	°C
----------------------------------	-------	----------	----

Electrical Characteristics: ←

At free-air temperature of 25° C

Min. Max.

Static:^b

Peak-Point Current	I_P	19	21	ma
Valley-Point Current	I_V	-	2.4	ma
Peak-Point-to-Valley-Point Current Ratio.	I_P/I_V	8/1	-	
Peak-Point Voltage	V_P	50	100	mv

← Indicates a change.



1N3129

		Min.	Max.	
Valley-Point Voltage.	V_V	300	-	mv
Positive Voltage at peak-point ma. = 21.	$V_{F'}$	475	575	mv
<i>Dynamic:</i> ^c				
Terminal Valley-Point Capacitance ^d	C	-	20	μmf
Total Series Inductance	L_S	-	0.6	m μh
Total Series Resistance	R_S	-	2.5	ohms

^a Derate linearly to 0 milliwatts at 100° C.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d At measured I_V for individual diode and includes case capacitance of 0.03 μmf .

**DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,**

and

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type 1N3128 also apply to the 1N3129



Tunnel Diode

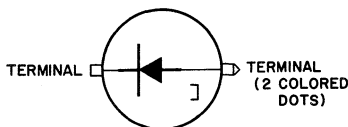
GERMANIUM TYPE

An Ultra-High-Speed Type for Applications Employing
Clock (Pulse-Repetition) Rates up to 1000 Mc with
Typical Switching Times of 1/5 Millimicrosecond or Less

GENERAL DATA

Mechanical:

Operating Position. Any
Maximum Overall Length. 0.265"
Maximum Width. 0.140"
Maximum Height. 0.055"
Case. Metal and Ceramic
Colored Dots for Device Identification (See *Dimensional Outline*). Orange and Green
Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values: ←

DC CURRENT at free-air temperature of 25° C:

Forward.	I_F	70 max.	ma
Reverse.	I_R	100 max.	ma

DISSIPATION:^a

At free-air temperature of 25° C	P	40 max.	mw
--	-----	---------	----

FREE-AIR-TEMPERATURE RANGE:

Operating.	T_{OPR}	-35 to +100	°C
Storage.	T_{STG}	-35 to +100	°C

CASE TEMPERATURE:

For 10 seconds maximum	T_C	230 max.	°C
----------------------------------	-------	----------	----

Electrical Characteristics: ←

At free-air temperature of 25° C

Min. Max.

Static:^b

Peak-Point Current	I_P	47.5	52.5	ma
Valley-Point Current	I_V	-	6	ma
Peak-Point-to-Valley-Point Current Ratio.	I_P/I_V	8/1	-	
Peak-Point Voltage	V_P	70	120	mv

← Indicates a change.



1N3130

		Min.	Max.	
Valley-Point Voltage.	V_V	350	-	mv
Positive Voltage at peak-point ma. = 52.5.	$V_{F'}$	520	620	mv
<i>Dynamic:</i> ^c				
Terminal Valley-Point Capacitance ^d .	C	-	-25	μmf
Total Series Inductance	L_S	-	0.6	$\text{m}\mu\text{h}$
Total Series Resistance	R_S	-	1.5	ohms

^a Derate linearly to 0 milliwatts at 100° C.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d At measured I_V for individual diode and includes case capacitance of 0.3 μmf .

DIMENSIONAL OUTLINE, STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE,

and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3128 also apply to the 1N3130



Silicon Rectifier

DIFFUSED-JUNCTION TYPE

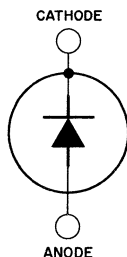
For Industrial and Consumer-Product Applications

See also Insulated-Version Type 1N3253

GENERAL DATA

Mechanical:

Case. Metal

Terminal Diagram (See *Dimensional Outline*):

The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps

For resistive or inductive load For capacitive-input filter

PEAK REVERSE VOLTAGE.	200 max.	200 max.	volts
RMS SUPPLY VOLTAGE. .	140 max.	70 max.	volts
FORWARD CURRENT: ^a			
DC.	750 max.	500 max.	ma
Peak recurrent. . .	—	6 max.	amp
Surge, for "turn-on" time of 2 milliseconds. .	—	35 max.	amp
FREE-AIR-TEMPERATURE RANGE:			
Operating	—65 to +100		°C
Storage	—65 to +175		°C
LEAD TEMPERATURE:			
For 10 seconds maximum	255 max.		°C



→ Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage		
Drop at dc forward amperes = 0.5	1.2	volts
Maximum Reverse Current:		
Static value at maximum-rated peak reverse voltage, forward ma. = 0, free-air temperature of 25° C	0.005	ma
Dynamic value at maximum-rated peak reverse voltage, maximum-rated dc forward current, free-air temperature of 75° C.	0.2	ma

^a At free-air temperatures up to 75° C. At free-air temperatures above 75° C, see *Rating Chart*.

OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

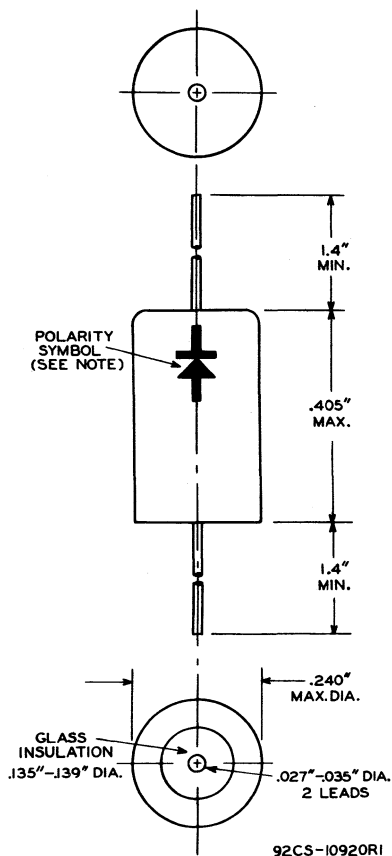
The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip → soldered within 0.25" of the metal case.

Because the case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.

→ Indicates a change.





NOTE: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

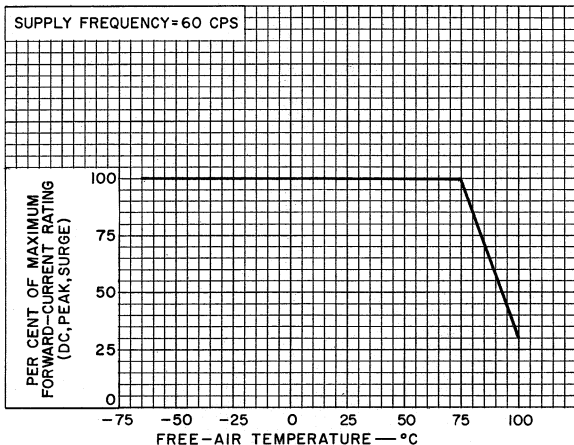


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Somerville, N. J.

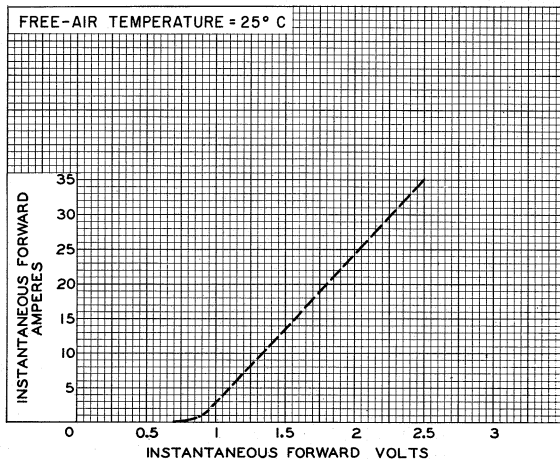
DATA 2
8-61

RATING CHART



92CS-9727R2

TYPICAL FORWARD CHARACTERISTIC



92CS-9730R2

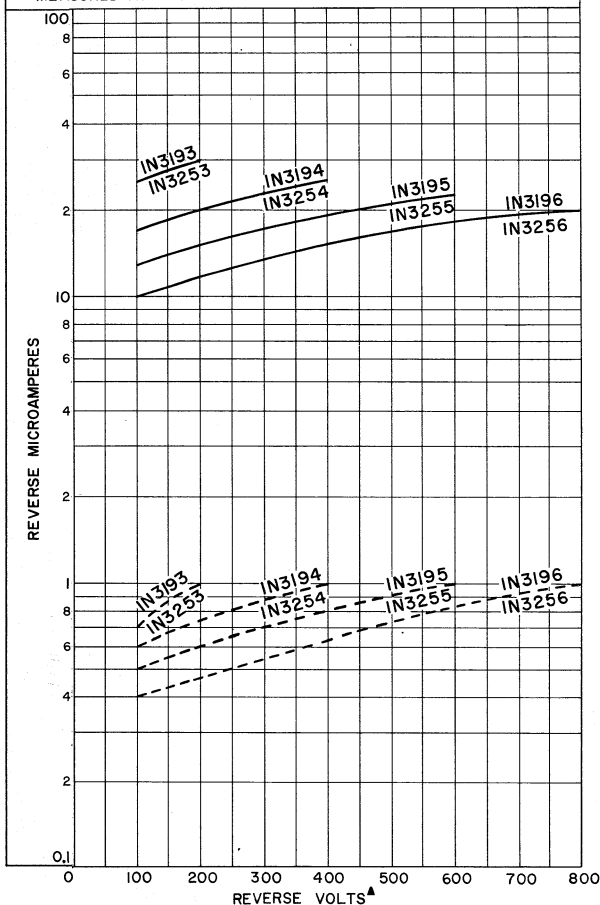


TYPICAL REVERSE CHARACTERISTICS

▲ DO NOT EXCEED MAXIMUM PEAK-INVERSE-VOLTAGE RATING.

SOLID-LINE CURVES: DYNAMIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 75° C AND AT
MAXIMUM DC FORWARD-CURRENT RATING

DOTTED LINE CURVES: STATIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 25° C



92CM-10921R1



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Somerville, N. J.

DATA 3
8-61

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

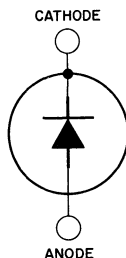
For Industrial and Consumer-Product Applications

See also Insulated-Version Type 1N3254

GENERAL DATA

Mechanical:

Case. Metal
 Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps

For resistive or inductive load For capacitive-input filter

PEAK REVERSE VOLTAGE.	400 max.	400 max.	volts
RMS SUPPLY VOLTAGE. .	280 max.	140 max.	volts
FORWARD CURRENT: ^a			
DC.	750 max.	500 max.	ma
Peak recurrent. . .	-	6 max.	amp
Surge, for "turn-on" time of 2 milliseconds. . .	-	35 max.	amp
FREE-AIR-TEMPERATURE RANGE:			
Operating	-65 to +100		°C
Storage	-65 to +175		°C
LEAD TEMPERATURE:			
For 10 seconds maximum	255 max.		°C



→ Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage

Drop at dc forward amperes = 0.5 1.2 volts

Maximum Reverse Current:

Static value at maximum-rated peak reverse

voltage, forward ma. = 0, free-air

temperature of 25° C 0.005 ma

Dynamic value at maximum-rated peak

reverse voltage, maximum-rated dc

forward current, free-air

temperature of 75° C 0.2 ma

^a At free-air temperatures up to 75° C. At free-air temperatures above 75° C, see *Rating Chart*.

OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

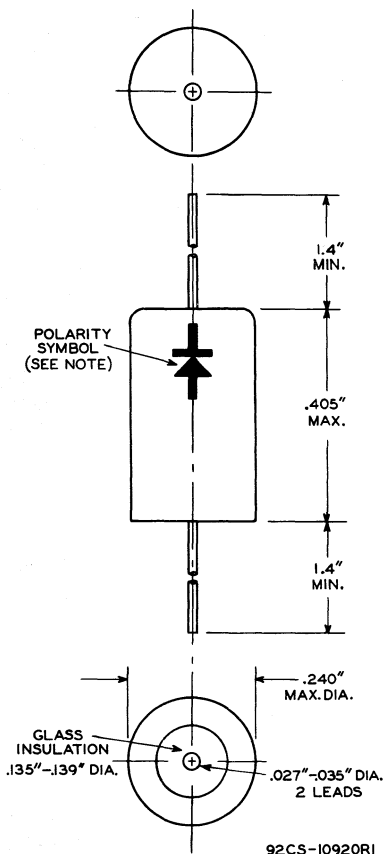
The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip → soldered within 0.25" of the metal case.

Because the case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.

→ Indicates a change.

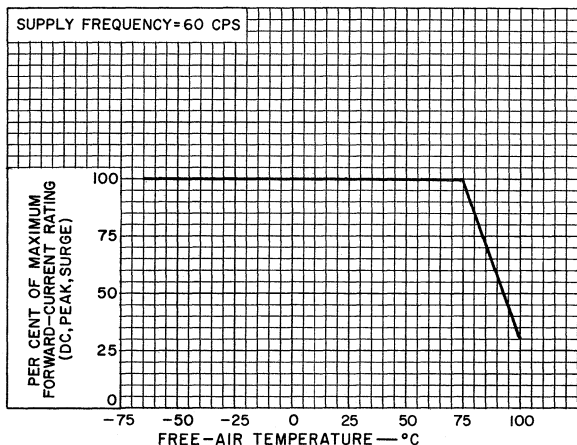




NOTE: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

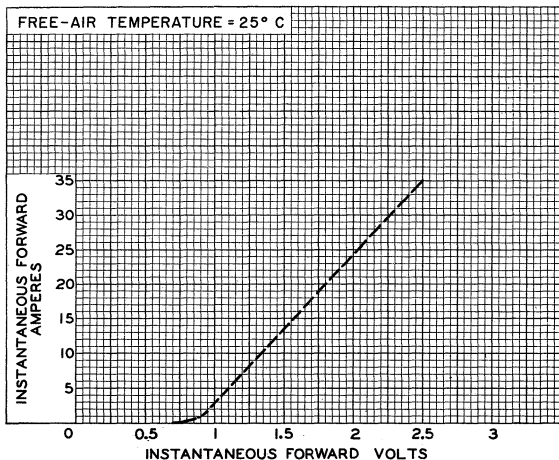


RATING CHART



92CS-9727R2

TYPICAL FORWARD CHARACTERISTIC



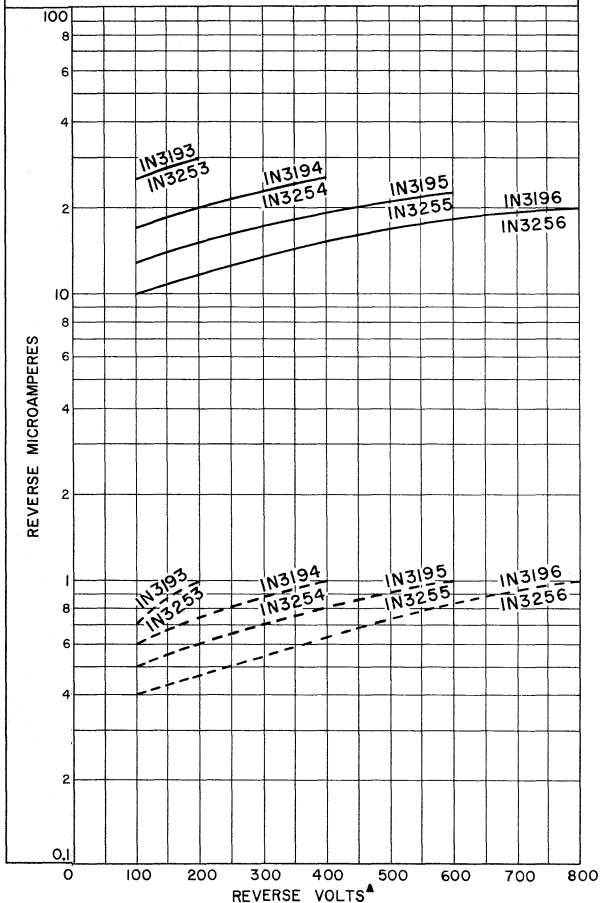
92CS-9730R2

TYPICAL REVERSE CHARACTERISTICS

▲ DO NOT EXCEED MAXIMUM PEAK-INVERSE-VOLTAGE RATING.

SOLID-LINE CURVES: DYNAMIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 75° C AND AT
MAXIMUM DC FORWARD-CURRENT RATING

DOTTED LINE CURVES: STATIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 25° C



92CM-10921R1



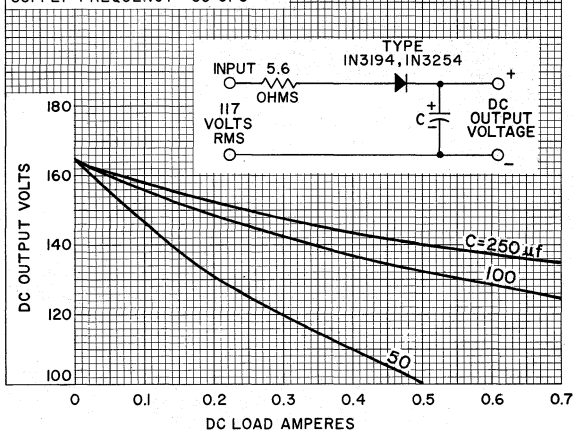
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Semiconductor & Materials Division
Somerville, N. J.

DATA 3
8-61

1N3194

TYPICAL OPERATION CHARACTERISTICS Half-Wave Rectifier

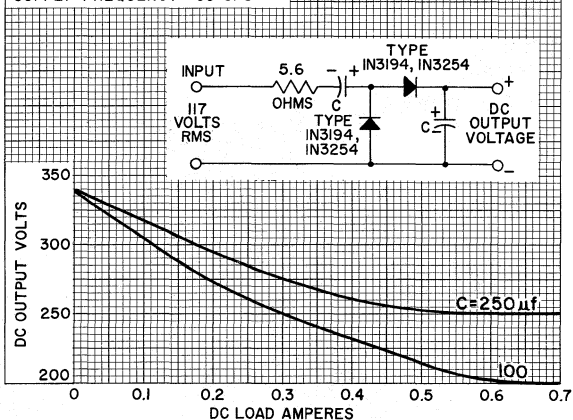
FREE-AIR TEMPERATURE = 25° C
SUPPLY FREQUENCY = 60 CPS



92CS-10917RI

Half-Wave Voltage Doubler

FREE-AIR TEMPERATURE = 25° C
SUPPLY FREQUENCY = 60 CPS

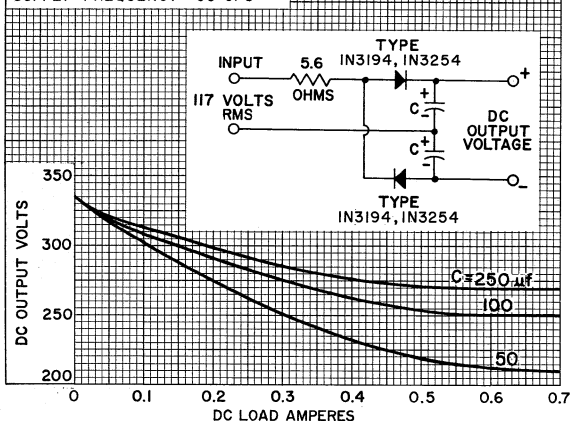


92CS-10916RI



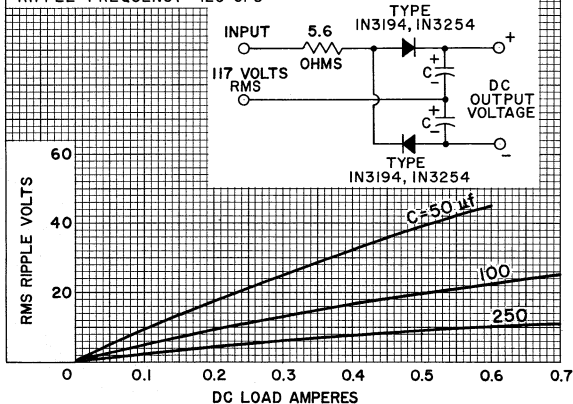
TYPICAL OPERATION CHARACTERISTICS Full-Wave Voltage Doubler

FREE-AIR TEMPERATURE = 25° C
SUPPLY FREQUENCY = 60 CPS



92CS-10918R1

FREE-AIR TEMPERATURE = 25° C
SUPPLY FREQUENCY = 60 CPS
RIPPLE FREQUENCY = 120 CPS



92CS-10919R1



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Somerville, N. J.

DATA 4
8-61

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

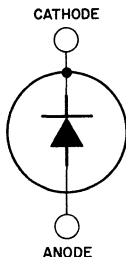
For Industrial and Consumer-Product Applications

See also Insulated-Version Type 1N3255

GENERAL DATA

Mechanical:

Case. Metal

Terminal Diagram (See *Dimensional Outline*):

The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps

For resistive or inductive load For capacitive-input filter

PEAK REVERSE VOLTAGE.	600 max.	600 max.	volts
RMS SUPPLY VOLTAGE. .	420 max.	210 max.	volts
FORWARD CURRENT: ^a			
DC.	750 max.	500 max.	ma
Peak recurrent. . .	—	6 max.	amp
Surge, for "turn-on" time of 2 milliseconds. .	—	35 max.	amp
FREE-AIR-TEMPERATURE RANGE:			
Operating	—65 to +100		°C
Storage	—65 to +175		°C
LEAD TEMPERATURE:			
For 10 seconds maximum	255 max.		°C



→ Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage

Drop at dc forward amperes = 0.5. 1.2 volts

Maximum Reverse Current:

Static value at maximum-rated peak

reverse voltage, forward ma. = 0,

free-air temperature of 25° C 0.005 ma

Dynamic value at maximum-rated peak

reverse voltage, maximum-rated dc

forward current, free-air

temperature of 75° C. 0.2 ma

^a At free-air temperatures up to 75° C. At free-air temperatures above 75° C, see *Rating Chart*.

OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

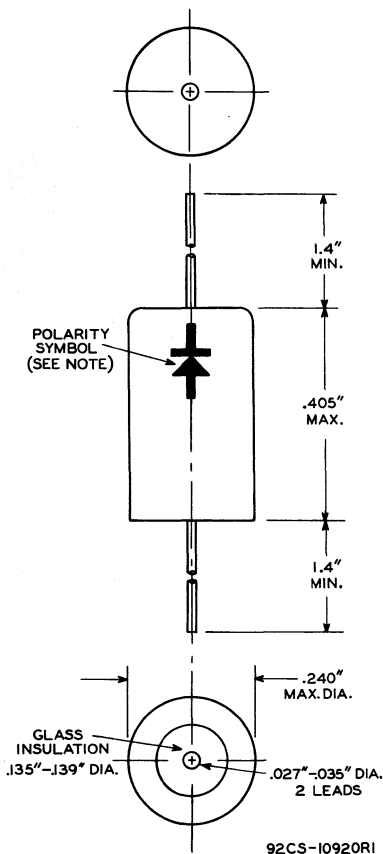
The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip
→ soldered within 0.25" of the metal case.

Because the case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.

→ Indicates a change.

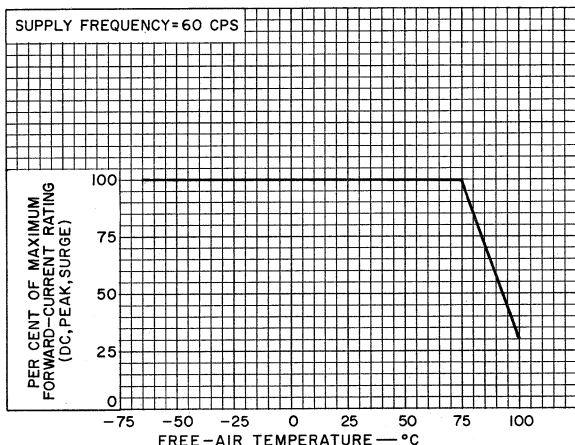




NOTE: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

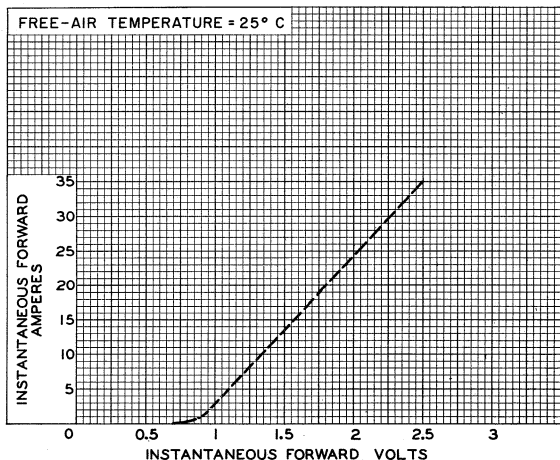


RATING CHART



92CS-9727R2

TYPICAL FORWARD CHARACTERISTIC



92CS-9730R2

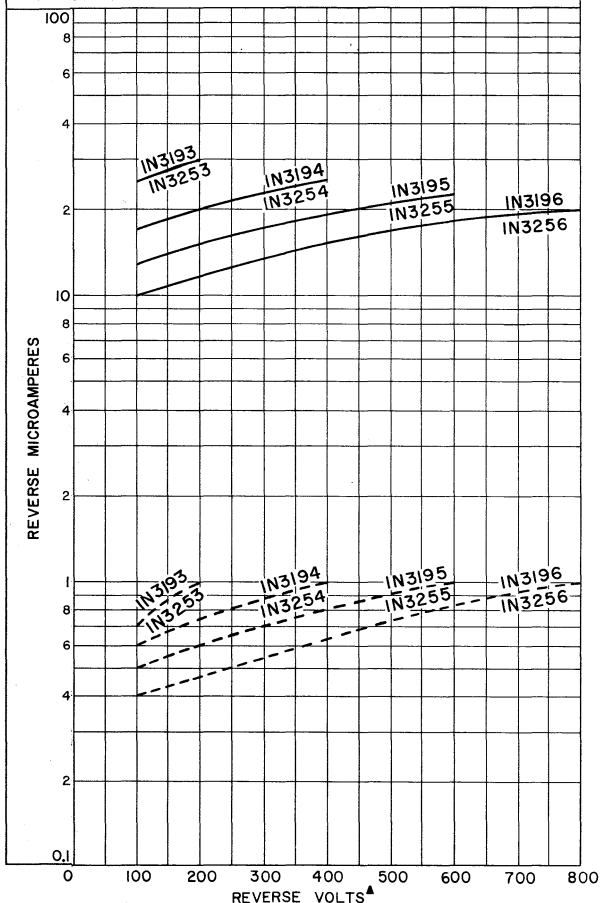


TYPICAL REVERSE CHARACTERISTICS

▲ DO NOT EXCEED MAXIMUM PEAK-INVERSE-VOLTAGE RATING.

SOLID-LINE CURVES: DYNAMIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 75° C AND AT
MAXIMUM DC FORWARD-CURRENT RATING

DOTTED LINE CURVES: STATIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 25° C



92CM-10921R1



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DATA 3
8-61

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

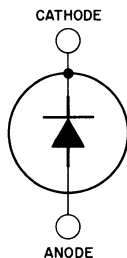
For Industrial and Consumer-Product Applications

See also Insulated-Version Type 1N3256

GENERAL DATA

Mechanical:

Case. Metal

Terminal Diagram (See *Dimensional Outline*):

The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps

For resistive or inductive load For capacitive-input filter

PEAK REVERSE VOLTAGE.	800 max.	800 max.	volts
RMS SUPPLY VOLTAGE. .	560 max.	280 max.	volts
FORWARD CURRENT: ^a			
DC.	500 max.	400 max.	ma
Peak recurrent. . .	—	5 max.	amp
Surge, for "turn-on" time of 2 milliseconds. . .	—	35 max	amp
FREE-AIR-TEMPERATURE RANGE:			
Operating	—65 to +100		°C
Storage	—65 to +175		°C
LEAD TEMPERATURE:			
For 10 seconds maximum	255 max.		°C



→ Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage

Drop at dc forward amperes = 0.5 1.2 volts

Maximum Reverse Current:

Static value at maximum-rated peak
reverse voltage, forward ma. = 0,
free-air temperature of 25° C

0.005 ma

Dynamic value at maximum-rated peak
reverse voltage, maximum-rated dc
forward current, free-air

temperature of 75° C 0.2 ma

^a At free-air temperatures up to 75° C. At free-air temperatures above 75° C,
see *Rating Chart*.

OPERATING CONSIDERATIONS

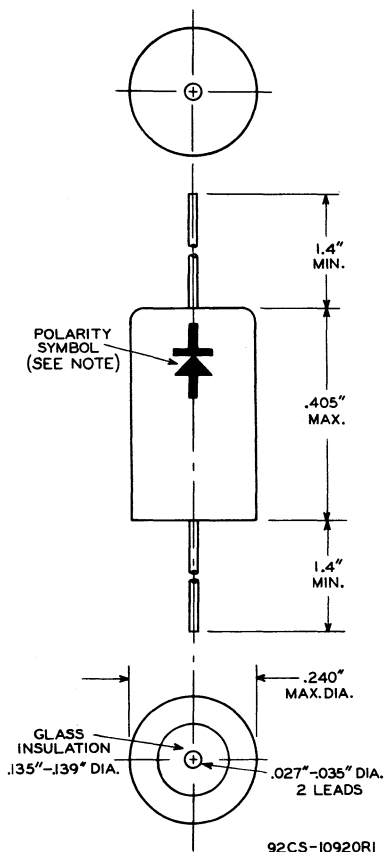
A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power transformer windings, or by an external resistor or choke.

The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip
→ soldered within 0.25" of the metal case.

Because the case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.

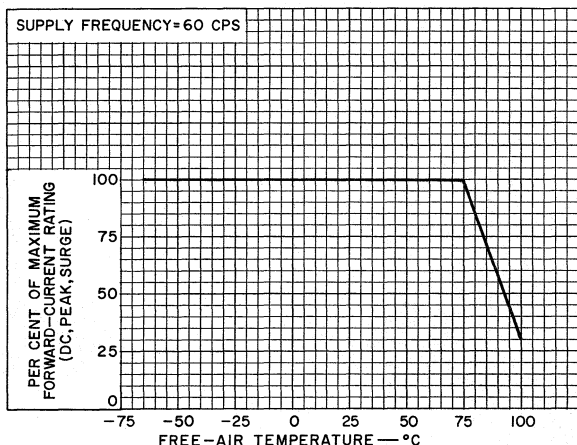
→ Indicates a change.



NOTE: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

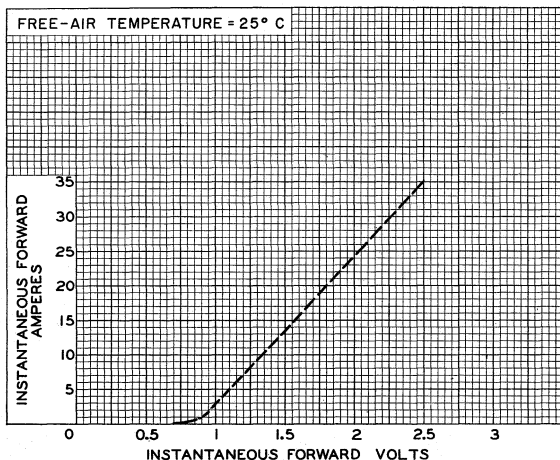


RATING CHART



92CS-9727R2

TYPICAL FORWARD CHARACTERISTIC



92CS-9730R2

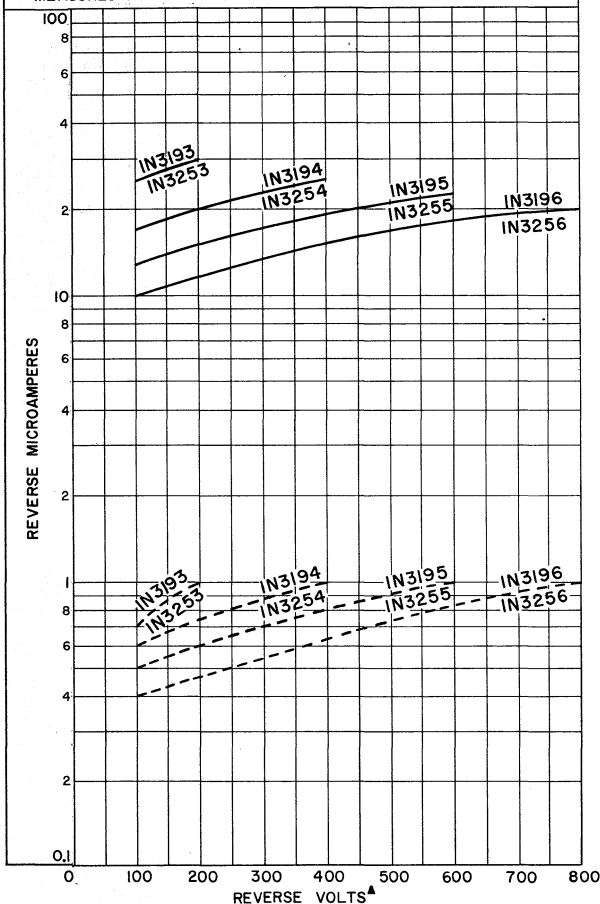


TYPICAL REVERSE CHARACTERISTICS

▲ DO NOT EXCEED MAXIMUM PEAK-INVERSE-VOLTAGE RATING.

SOLID-LINE CURVES: DYNAMIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 75° C AND AT
MAXIMUM DC FORWARD-CURRENT RATING

DOTTED LINE CURVES: STATIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 25° C



92CM-10921R1



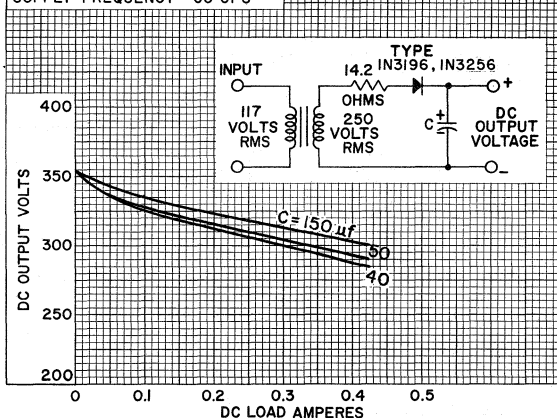
RADIO CORPORATION OF AMERICA
Semiconductor & Materials Division Somerville, N. J.

DATA 3
8-61

1N3196

TYPICAL OPERATION CHARACTERISTICS Half-Wave Rectifier

FREE-AIR TEMPERATURE = 25° C
SUPPLY FREQUENCY = 60 CPS



92CS-10915R1



1N3253

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

See also Uninsulated-Version Type 1N3193

The 1N3253 is the same as the 1N3193 except for the following items:

Mechanical:

Case. Metal with Insulating Sleeve^a

1N3254

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

See also Uninsulated-Version Type 1N3194

The 1N3254 is the same as the 1N3194 except for the following items:

Mechanical:

Case. Metal with Insulating Sleeve^a

1N3255

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

See also Uninsulated-Version Type 1N3195

The 1N3255 is the same as the 1N3195 except for the following items:

Mechanical:

Case. Metal with Insulating Sleeve^a

^a The maximum diameter of the metal case with insulating sleeve is 0.240". The specifications of the insulating sleeve are: material, plastic; wall thickness, 0.002"; dielectric strength, 4500 volts/mil at 25° C; 3150 volts/mil at 150° C; moisture absorption, 0.3% (surface resistivity is not affected by moisture); degree of transparency, optically clear.



1N3256

Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

See also Uninsulated-Version Type 1N3196

The 1N3256 is the same as the 1N3196 except for the following items:

Mechanical:

Case. Metal with Insulating Sleeve^a

^a The maximum diameter of the metal case with insulating sleeve is 0.240". The specifications of the insulating sleeve are: material, plastic; wall thickness, 0.002"; dielectric strength, 4500 volts/mil at 25° C; 3150 volts/mil at 150° C; moisture absorption, 0.3% (surface resistivity is not affected by moisture); degree of transparency, optically clear.



Silicon Rectifier

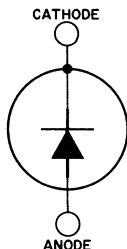
DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

GENERAL DATA

Mechanical:

Operating Position. Any
 Maximum Length (Excluding flexible leads) 0.405"
 Maximum Diameter. 0.240"
 Case. Coated Metal with Insulating Sleeve^a
 Seals Hermetic
 Leads, Flexible 2
 Minimum length. 1.4"
 Diameter. 0.027" to 0.035"
 Orientation See Dimensional Outline
 Terminal Diagram (See Dimensional Outline):



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps

For resistive or inductive load For capacitive-input filter

PEAK REVERSE VOLTAGE.	1000 max.	1000 max.	volts
RMS SUPPLY VOLTAGE. .	700 max.	350 max.	volts
FORWARD CURRENT: ^b			
DC.	400 max.	300 max.	ma
Peak recurrent. . .	—	4 max.	amp
Surge, for "turn-on" time of 2 milliseconds. .	—	35 max.	amp
FREE-AIR TEMPERATURE RANGE:			
Operating	—65 to +100		°C
Storage	—65 to +175		°C



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DATA 1
 4-62

1N3563

LEAD TEMPERATURE:

For 10 seconds maximum. 255 max. °C

Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage

Drop at dc forward amperes = 0.5. 1.2 volts

Maximum Reverse Current:

Static value at maximum-rated peak
reverse voltage, forward ma. = 0,
free-air temperature of 25° C 0.005 ma

Dynamic value at maximum-rated peak
reverse voltage, maximum-rated
dc forward current, free-air
temperature of 75° C 0.2 ma

^a The maximum diameter of the metal case with insulating sleeve is 0.240". The specifications of the insulating sleeve are: material, plastic; wall thickness, 0.002"; dielectric strength, 4500 volts/mil at 25° C, 3150 volts/mil at 150° C; moisture absorption, 0.3% (surface resistivity is not affected by moisture); degree of transparency, optically clear. The insulating sleeve may extend 1/16" beyond ends of case. The metal case is also provided with a special coating designed to protect the device against the effects of severe environmental conditions.

^b At free-air temperatures up to 75° C. At free-air temperatures above 75° C, see *Rating Chart*.

OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

The *flexible leads* of this rectifier are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip soldered within 0.25" of the metal case.

Because the case of this rectifier may operate at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the rectifier. It is recommended that this rectifier be mounted on the underside of the chassis.

DIMENSIONAL OUTLINE, RATING CHART, and

TYPICAL FORWARD CHARACTERISTIC
shown under Type 1N3193 also apply to the 1N3563

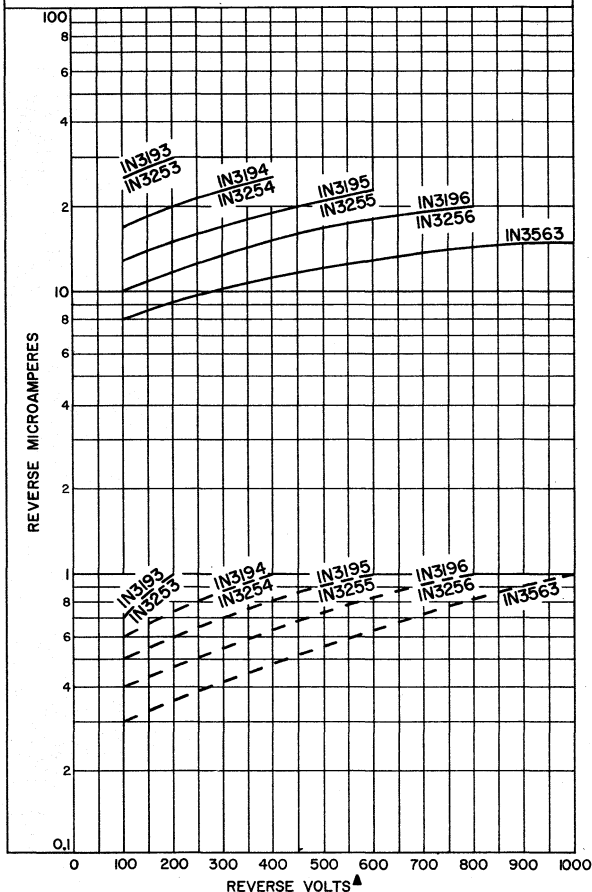


TYPICAL REVERSE CHARACTERISTICS

▲ DO NOT EXCEED MAXIMUM PEAK-REVERSE-VOLTAGE RATING.

SOLID-LINE CURVES: DYNAMIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 75° C AND AT
MAXIMUM DC FORWARD-CURRENT RATING

DASHED LINE CURVES: STATIC CHARACTERISTICS
MEASURED AT FREE-AIR TEMPERATURE = 25° C



92CM-10921R2

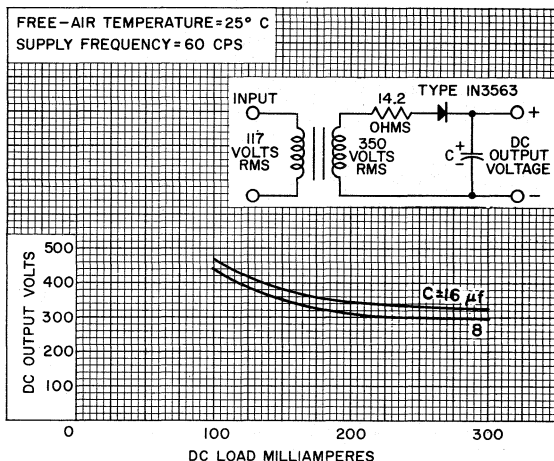


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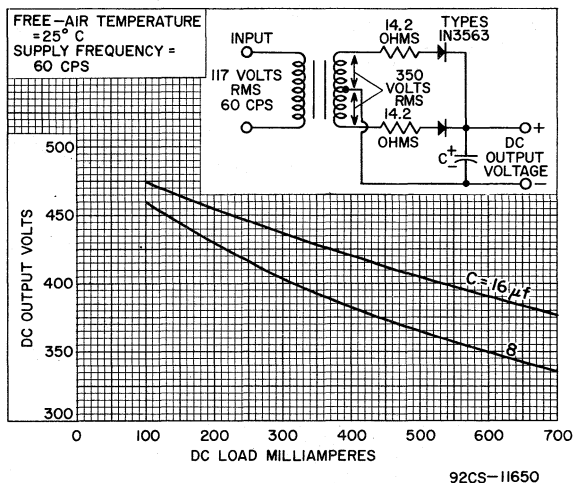
DATA 2
4-62

1N3563

TYPICAL OPERATION CHARACTERISTICS Half-Wave Rectifier



TYPICAL OPERATION CHARACTERISTICS Full-Wave Rectifier



Silicon Rectifier

DIFFUSED-JUNCTION TYPE

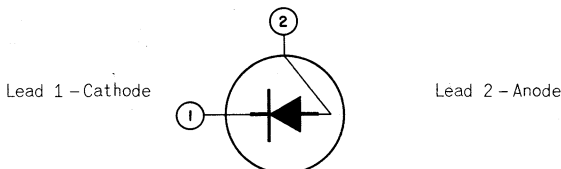
For Industrial and Consumer-Product Applications

GENERAL DATA

Mechanical:

Dimensions. . . . Similar to Outline TO-1 in General Section except that lead 3 is omitted

Terminal Diagram: BOTTOM VIEW



The arrow indicates direction of forward (easy) current flow as indicated by dc ammeter.

HALF-WAVE RECTIFIER

Maximum and Minimum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
and for capacitor-input filter

PEAK REVERSE VOLTAGE.	100 max.	volts
RMS SUPPLY VOLTAGE.	35 max.	volts
FORWARD CURRENT: ^a		
DC.	125 max.	ma
Peak recurrent.	1.3 max.	amp
Surge, for "turn-on" time of 2 milliseconds	30 max.	amp
FREE-AIR TEMPERATURE RANGE:		
Operating	-65 to +100	°C
Storage	-65 to +175	°C
LEAD TEMPERATURE:		
For 10 seconds maximum.	255 max.	°C

Characteristics:

At free-air temperature of 25° C unless otherwise specified

Maximum Instantaneous Forward Voltage		
Drop at dc forward ma. = 125.	1	volt
Maximum Reverse Current:		
Static value at maximum-rated peak reverse voltage, forward ma. = 0, free-air temperature of 25° C.	0.005	ma
Dynamic value at maximum-rated peak reverse voltage, maximum-rated dc forward current, free-air temperature of 65° C	0.3	ma

^a At free-air temperatures up to 65° C. At free-air temperatures above 65° C, see Rating Chart.



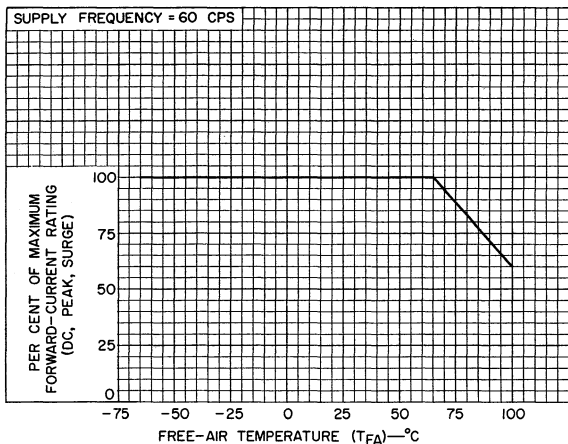
OPERATING CONSIDERATIONS

A *surge-limiting impedance* should always be used in series with the rectifier. The impedance value must be sufficient to limit the surge current to the value specified under the maximum ratings. This impedance may be provided by the power-transformer windings, or by an external resistor or choke.

The *flexible leads* of this transistor are usually soldered to the circuit elements. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

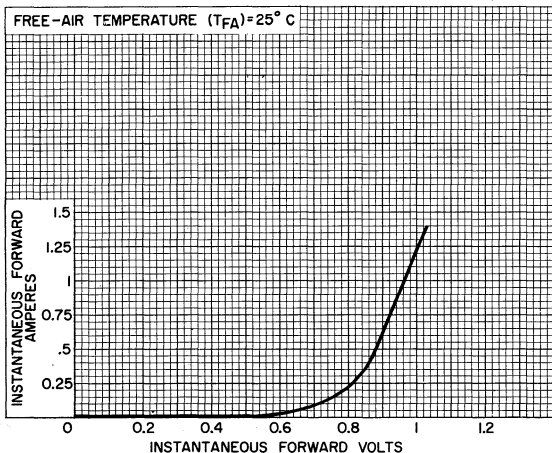
When dip soldering is employed in the assembly of printed circuitry using this rectifier, the leads should not be dip soldered within 0.25" of the metal case.

RATING CHART



92CS-11670RI

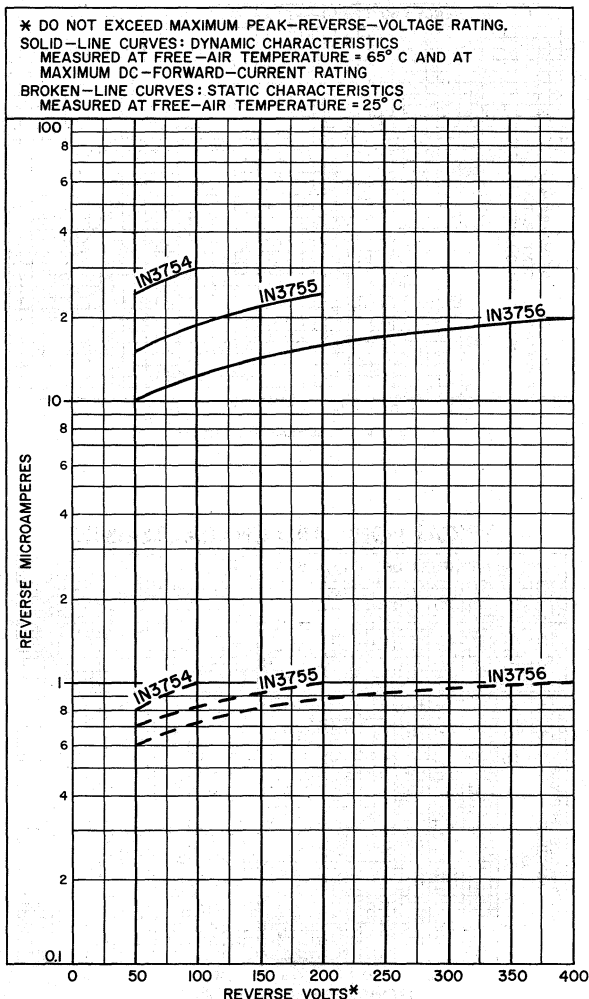
TYPICAL FORWARD CHARACTERISTIC



92CS-11669



TYPICAL REVERSE CHARACTERISTICS



92CM-11671



Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

The 1N3755 is the same as the 1N3754 except for the following items:

HALF-WAVE RECTIFIER

Maximum Ratings, Absolute-Maximum Values:

*For power-supply frequency of 60
cps and for capacitor-input filter*

PEAK REVERSE VOLTAGE.	200 max.	volts
RMS SUPPLY VOLTAGE.	70 max.	volts



Silicon Rectifier

DIFFUSED-JUNCTION TYPE

For Industrial and Consumer-Product Applications

The 1N3756 is the same as the 1N3754 except for the following items:

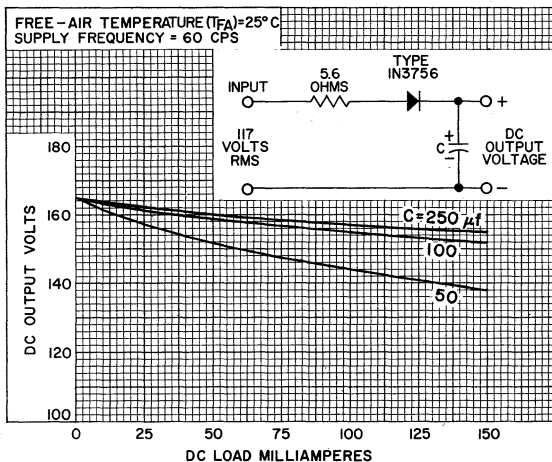
HALF-WAVE RECTIFIER

Maximum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps
and for capacitor-input filter

PEAK REVERSE VOLTAGE. 400 max. volts
RMS SUPPLY VOLTAGE. 140 max. volts

TYPICAL OPERATION CHARACTERISTICS Half-Wave Rectifier



92CS-11672

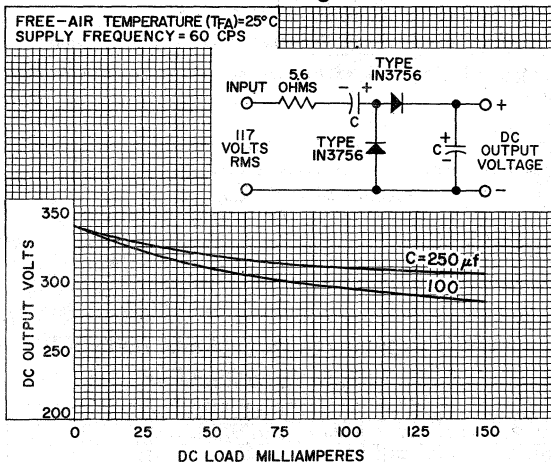


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DATA 1
8-62

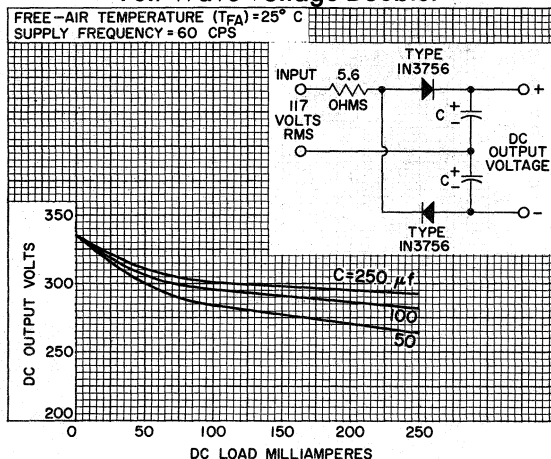
1N3756

TYPICAL OPERATION CHARACTERISTICS Half-Wave Voltage Doubler



92CS-11673

TYPICAL OPERATION CHARACTERISTICS Full-Wave Voltage Doubler



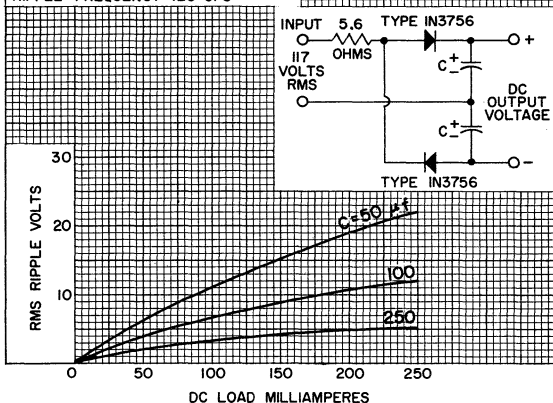
92CS-11674



TYPICAL OPERATION CHARACTERISTICS

Full-Wave Voltage Doubler

FREE-AIR TEMPERATURE (T_{FA}) = 25° C
 SUPPLY FREQUENCY = 60 CPS
 RIPPLE FREQUENCY = 120 CPS



92CS-11675



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DATA 2
 8-62

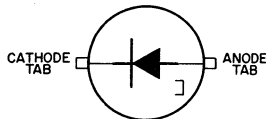
Tunnel Diode

GERMANIUM P-ON-N REGION, EPITAXIAL TYPE
For Switching and Small-Signal Applications Requiring Control ($\pm 10\%$) of Peak-Point Current and Switching Times Greater than 1800 Picoseconds

GENERAL DATA

Mechanical:

Operating Position. Any
Maximum Overall Length. 0.270"
Maximum Width. 0.130"
Maximum Height. 0.055"
Case. Metal and Ceramic
Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	10 max.	ma
Reverse	I_R	15 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	5 max.	mw
Above 25° C.	<i>Derate linearly to 0 mw at 100° C</i>	

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^{\circ}\text{C}$
Storage	T_{STG}	-35 to 100	$^{\circ}\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^{\circ}\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	4.5	—	5.5	ma
Valley-Point Current.	I_V	—	—	0.75	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	6/1	—	—	
Positive Voltage at peak-point ma. = 5.5	$V_{F'}$	430	—	590	mv



Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance^d C - - 25 pf

Total Series Resistance R_S - - 3 ohms

Switching Time:

Rise time^e t_r - 1800 - psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

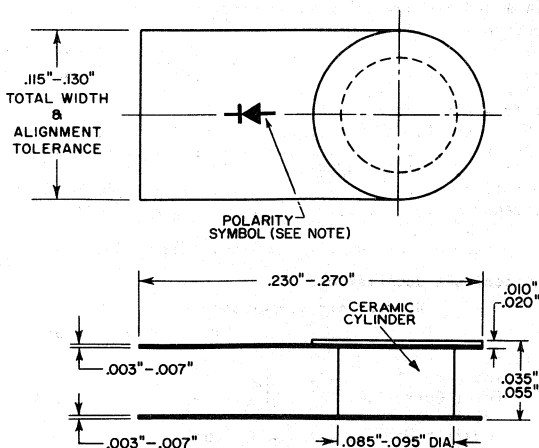
^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P .

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS

A low-temperature solder, (such as Alpha #111 alloy, rosin-filled, or equivalent) should be used. To minimize soldering time, a pre-tinned circuit board should be used. To protect the junction against overheating, the tunnel diode should be held with long-nose pliers.

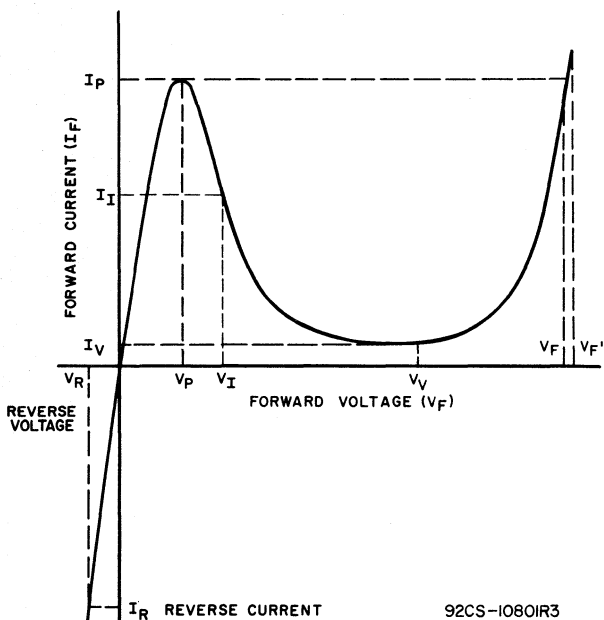


92CS-11806

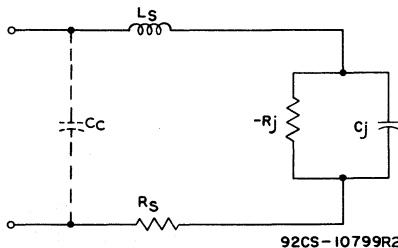
NOTE: ARROW INDICATES DIRECTION OF FORWARD CURRENT FLOW AS INDICATED BY DC AMMETER.

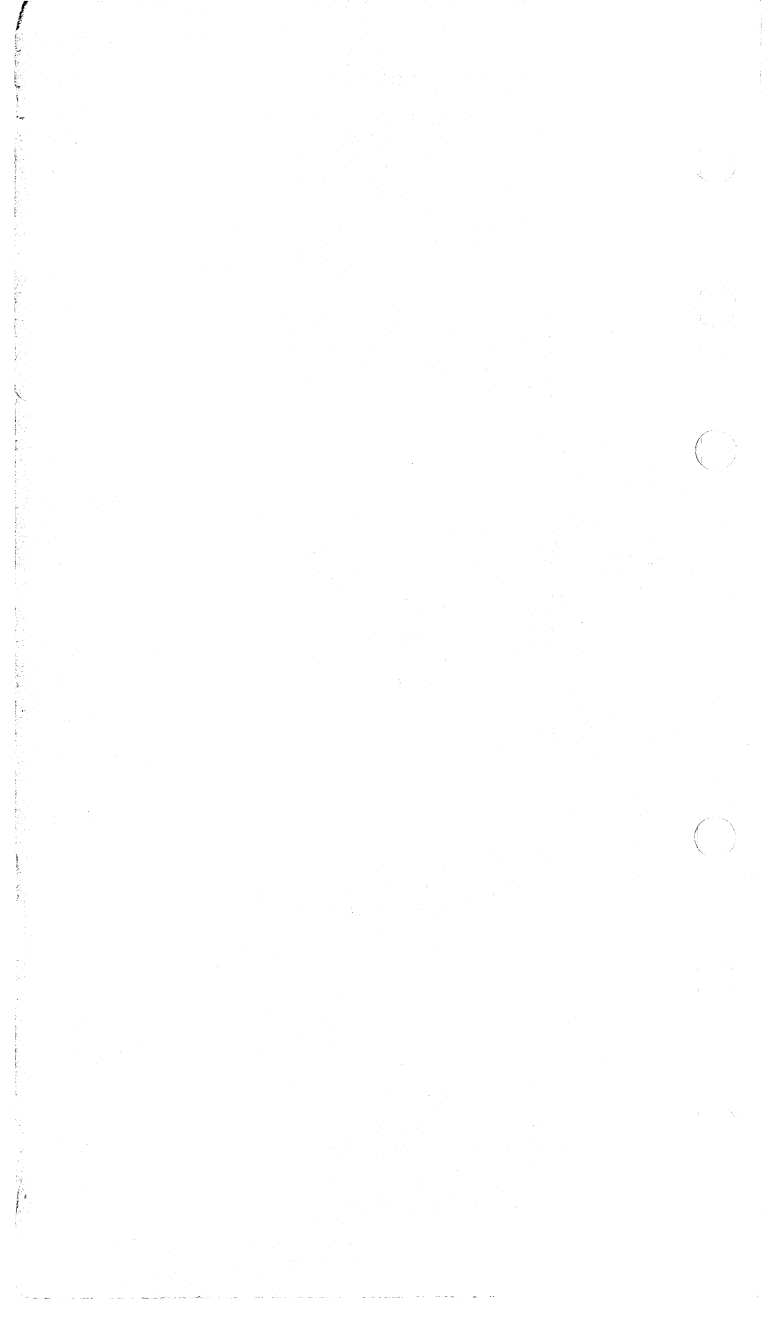


STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE



EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION





Tunnel Diode

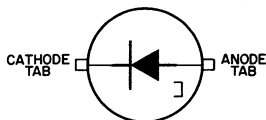
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 10\%$) of Peak-Point Current
and Switching Times Greater than 900 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:			
Forward	I_F	18 max.	ma
Reverse	I_R	25 max.	ma
DISSIPATION:			
At free-air temperatures:			
From -35° to 25° C.		10 max.	mw
Above 25° C	Derate linearly to 0 mw at 100° C		
FREE-AIR TEMPERATURE RANGE:			
Operating	T_{OPR}	-35 to 100	$^{\circ}\text{C}$
Storage	T_{STG}	-35 to 100	$^{\circ}\text{C}$
TAB TEMPERATURE: ^a			
For 3 seconds maximum	T_T	175 max.	$^{\circ}\text{C}$

Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	9	—	11	ma
Valley-Point Current.	I_V	—	—	1.5	ma
Peak-Point-to-Valley-Point					
Current Ratio	I_P/I_V	6/1	—	—	
Positive Voltage at peak-point					
ma. = 11.	V_F'	440	—	600	mv



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DATA
8-62

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	25	pf
Total Series Resistance	R _S	-	-	2.5	ohms
Switching Time:					
Rise time ^e	t _r	-	900	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_f at a constant value of I_p.

$$t_r \sim \frac{C(V_F - V_P)}{(I_P - I_V)} \sim \frac{C}{2 I_P}$$

**SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,**

and

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type IN3847 also apply to the IN3848



Tunnel Diode

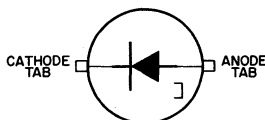
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 10\%$) of Peak-Point Current
and Switching Times Greater than 600 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	35 max.	ma
Reverse	I_R	50 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	20 max.	mw
Above 25° C.	Derate linearly to 0 mw at 100° C	

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ$ C
Storage	T_{STG}	-35 to 100	$^\circ$ C

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ$ C
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	18	-	22	ma
Valley-Point Current.	I_V	-	-	3	ma
Peak-Point-to-Valley- Point Current Ratio	I_P/I_V	6/1	-	-	
Positive Voltage at peak- point ma. = 22.	V_F	460	-	620	mv



1N3849

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	30	pf
Total Series Resistance . .	R _S	-	-	2	ohms
Switching Time:					
Rise time ^e	t _r	-	600	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_f at a constant value of I_p.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

**SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,**

and

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type 1N3847 also apply to the 1N3849



Tunnel Diode

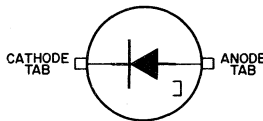
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 10\%$) of Peak-Point Current
and Switching Times Greater than 350 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See Dimensional Outline):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	85 max.	ma
Reverse	I_R	125 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	50 max.	mw
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Above 25° C. Derate linearly to 0 mw at 100° C

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ$ C
Storage	T_{STG}	-35 to 100	$^\circ$ C

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ$ C
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	45	—	55	ma
Valley-Point Current.	I_V	—	—	7.5	ma
Peak-Point-to-Valley-Point Current Ratio . . .	I_P/I_V	6/1	—	—	
Positive Voltage at peak-point ma. = 55.	V_F	530	—	640	mv



1N3850

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance^d C - - 40 pf

Total Series Resistance R_S - - 1.5 ohms

Switching Time:

Rise time^e t_r - 350 - psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

**SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,
and**

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type 1N3847 also apply to the 1N3850



Tunnel Diode

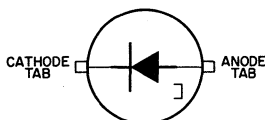
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications Requiring Control ($\pm 10\%$) of Peak-Point Current and Switching Times Greater than 125 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	170 max.	ma
Reverse	I_R	250 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	100 max.	mw
---	----------	----

Above 25° C. Derate linearly to 0 mw at 100° C

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ\text{C}$
Storage	T_{STG}	-35 to 100	$^\circ\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	90	—	110	ma
Valley-Point Current.	I_V	—	—	15	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	6/1	—	—	
Positive Voltage at peak-point ma. = 110	V_F	540	—	650	mv



1N3851

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	40	pf
Total Series Resistance . .	R _S	-	-	1	ohm
Switching Time:					
Rise time ^e	t _r	-	125	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS,

DIMENSIONAL OUTLINE,

STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE,

and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3851



Tunnel Diode

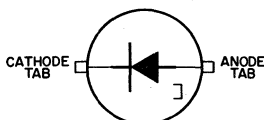
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications Requiring Control ($\pm 5\%$) of Peak-Point Current and Switching Times Greater than 1200 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:			
Forward	I_F	10 max.	ma
Reverse	I_R	15 max.	ma
DISSIPATION:			
At free-air temperatures:			
From -35° to 25° C.		5 max.	mw
Above 25° C.	Derate linearly to 0 mw at 100° C		
FREE-AIR TEMPERATURE RANGE:			
Operating	T_{OPR}	-35 to 100	$^{\circ}\text{C}$
Storage	T_{STG}	-35 to 100	$^{\circ}\text{C}$
TAB TEMPERATURE: ^a			
For 3 seconds maximum	T_T	175 max.	$^{\circ}\text{C}$

Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	4.75	—	5.25	ma
Valley-Point Current.	I_V	—	—	0.6	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	50	—	90	mv
Valley-Point Voltage.	V_V	330	—	—	mv
Positive Voltage at peak-point ma. = 5.25.	V_F'	490	—	560	mv



IN3852

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance^d C - - 15 pf

Total Series Resistance . . . R_S - - 3 ohms

Switching Time:

Rise time^e t_r - 1200 - psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_P.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS,

DIMENSIONAL OUTLINE,

STATIC FORWARD CHARACTERISTIC

OF A TUNNEL DIODE,

and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE

IN THE NEGATIVE-RESISTANCE REGION

shown under Type IN3847 also apply to the IN3852



Tunnel Diode

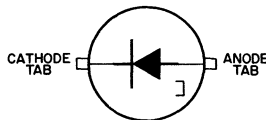
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 600 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	18 max.	ma
Reverse	I_R	25 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C. 10 max. mw

Above 25° C. Derate linearly to 0 mw at 100° C

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^{\circ}$ C
Storage	T_{STG}	-35 to 100	$^{\circ}$ C

TAB TEMPERATURE:^a

For 3 seconds maximum T_T 175 max. $^{\circ}$ C

Electrical Characteristics:

At free-air temperature = 25° C

Static: ^b		Min.	Typical	Max.	
Peak-Point Current.	I_P	9.5	—	10.5	ma
Valley-Point Current.	I_V	—	—	1.2	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	55	—	95	mv
Valley-Point Voltage.	V_V	350	—	—	mv
Positive Voltage at peak-point ma. = 10.5.	V_{F1}	510	—	580	mv



1N3853

	Min.	Typical	Max.	
<i>Dynamic:</i> ^c				
Terminal Valley-Point				
Capacitance ^d C	-	-	15	pf
Total Series Resistance R _S	-	-	2.5	ohms
Switching Time:				
Rise time ^e t _r	-	600	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS, DIMENSIONAL OUTLINE, STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE, and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3853



Tunnel Diode

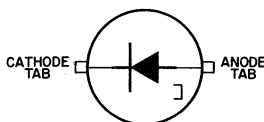
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 400 Picoseconds

GENERAL DATA

Mechanical:

Operating Position Any
Maximum Overall Length 0.270"
Maximum Width 0.130"
Maximum Height 0.055"
Case Metal and Ceramic
Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward
current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	35 max.	ma
Reverse	I_R	50 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C	20 max.	mw
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Above 25° C	<i>Derate linearly to 0 mw at 100° C</i>	
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FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ\text{C}$
Storage	T_{STG}	-35 to 100	$^\circ\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° CStatic:^b

Min. Typical Max.

Peak-Point Current	I_P	19	—	21	ma
Valley-Point Current	I_V	—	—	2.4	ma
Peak-Point-to-Valley- Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage	V_P	65	—	105	mv
Valley-Point Voltage	V_V	365	—	—	mv
Positive Voltage at peak- point ma. = 21	$V_{F'}$	530	—	600	mv



RADIO CORPORATION OF AMERICA
Semiconductor & Materials Division
Somerville, N. J.

DATA
8-62

IN3854

Dynamic:^c

Min. Typical Max.

Terminal Valley-Point

Capacitance^d. C - - 20 pf

Total Series Resistance . . . R_S - - 2 ohms

Switching Time:

Rise time^e. t_r - 400 - psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P.

$$t_r \sim \frac{C(V_F - V_P)}{(I_P - I_V)} \sim \frac{C}{2 I_P}$$

**SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,
and**

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type IN3847 also apply to the IN3854



Tunnel Diode

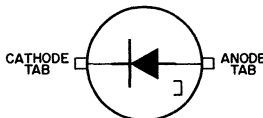
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 200 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	85 max.	ma
Reverse	I_R	125 max.	ma

DISSIPATION:

At free-air temperatures:	P		
From -35° to 25° C.		50 max.	mw
Above 25° C.		Derate linearly to 0 mw at 100° C	

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ\text{C}$
Storage	T_{STG}	-35 to 100	$^\circ\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	47.5	—	52.5	ma
Valley-Point Current.	I_V	—	—	6	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	80	—	130	mv
Valley-Point Voltage.	V_V	380	—	—	mv
Positive Voltage at peak-point ma. = 52.5.	$V_{F'}$	550	—	620	mv



1N3855

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point Capacitance ^d C	-	-	25	pf
Total Series Resistance R _S	-	-	1.5	ohms
Switching Time:				
Rise time ^e t _r	-	200	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_p.

$$t_r \sim \frac{C(V_F - V_P)}{(I_P - I_V)} \sim \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS, DIMENSIONAL OUTLINE, STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE, and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3855



Tunnel Diode

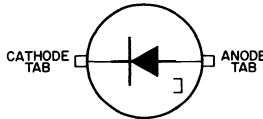
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 75 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	170 max.	ma
Reverse	I_R	250 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	100 max.	mw
Above 25° C.	Derate linearly to 0 mw at 100° C	

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^{\circ}$ C
Storage	T_{STG}	-35 to 100	$^{\circ}$ C

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^{\circ}$ C
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	95	—	105	ma
Valley-Point Current.	I_V	—	—	12	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	90	—	140	mv
Valley-Point Voltage.	V_V	390	—	—	mv
Positive Voltage at peak-point ma. = 105	$V_{F'}$	560	—	630	mv



RADIO CORPORATION OF AMERICA
Semiconductor & Materials Division Somerville, N. J.

DATA
8-62

1N3856

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance^d. C - - 25 pf

Total Series Resistance . . R_S - - 1 ohm

Switching Time:

Rise time^e. t_r - 75 - psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_p.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS, DIMENSIONAL OUTLINE, STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE,

and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3856



Tunnel Diode

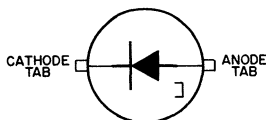
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 600 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	10 max.	ma
Reverse	I_R	15 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	5 max.	mw
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Above 25° C. Derate linearly to 0 mw at 100° C

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^{\circ}\text{C}$
Storage	T_{STG}	-35 to 100	$^{\circ}\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^{\circ}\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	4.75	-	5.25	ma
Valley-Point Current.	I_V	-	-	0.6	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	-	-	
Peak-Point Voltage.	V_P	50	-	90	mv
Valley-Point Voltage.	V_V	330	-	-	mv
Positive Voltage at peak-point ma. = 5.25.	$V_{F'}$	490	-	560	mv



RADIO CORPORATION OF AMERICA
Semiconductor & Materials Division Somerville, N. J.

DATA
8-62

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	8	pf
Total Series Resistance . .	R _S	-	-	3	ohms
Switching Time:					
Rise time ^e	t _r	-	600	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_p.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

**SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,
and**

**EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION**

shown under Type 1N3847 also apply to the 1N3857



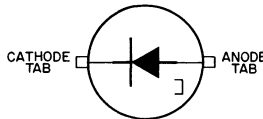
Tunnel Diode

GERMANIUM P-ON-N REGION, EPITAXIAL TYPE
 For Switching and Small-Signal Applications Re-
 quiring Control ($\pm 5\%$) of Peak-Point Current and
 Switching Times Greater than 300 Picoseconds

GENERAL DATA

Mechanical:

Operating Position. Any
 Maximum Overall Length. 0.270"
 Maximum Width. 0.130"
 Maximum Height. 0.055"
 Case. Metal and Ceramic
 Terminal Diagram (See *Dimensional Outline*):



The arrow indicates direction of forward
 current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	18 max.	ma
Reverse	I_R	25 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	10 max.	mw
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Above 25° C Derate linearly to 0 mw at 100° C

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ\text{C}$
Storage	T_{STG}	-35 to 100	$^\circ\text{C}$

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ\text{C}$
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	9.5	—	10.5	ma
Valley-Point Current.	I_V	—	—	1.2	ma
Peak-Point-to-Valley- Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	55	—	95	mv
Valley-Point Voltage.	V_V	350	—	—	mv
Positive Voltage at peak- point ma. = 10.5.	$V_{F'}$	510	—	580	mv



1N3858

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	8	pf
Total Series Resistance . .	R _S	-	-	2.5	ohms
Switching Time:					
Rise time ^e	t _r	-	300	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_p.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,
and
EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION
shown under Type 1N3847 also apply to the 1N3858



Tunnel Diode

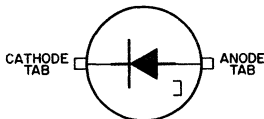
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For Switching and Small-Signal Applications Requiring Control ($\pm 5\%$) of Peak-Point Current and Switching Times Greater than 200 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	35 max.	ma
Reverse	I_R	50 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	20 max.	mw
Above 25° C	Derate linearly to 0 mw at 100° C	

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^\circ$ C
Storage	T_{STG}	-35 to 100	$^\circ$ C

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^\circ$ C
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	19	—	21	ma
Valley-Point Current.	I_V	—	—	2.4	ma
Peak-Point-to-Valley-Point Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	65	—	105	mv
Valley-Point Voltage.	V_V	365	—	—	mv
Positive Voltage at peak-point ma. = 21.	V_{F1}	530	—	600	mv



1N3859

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point

Capacitance ^d	C	-	-	10	pf
Total Series Resistance . .	R _S	-	-	2	ohms
Switching Time:					
Rise time ^e	t _r	-	200	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e Calculated rise time (approximate) for a germanium tunnel diode when switching from V_P to V_F at a constant value of I_P.

$$t_r \approx \frac{C(V_F - V_P)}{(I_P - I_V)} \approx \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS, DIMENSIONAL OUTLINE, STATIC FORWARD CHARACTERISTIC OF A TUNNEL DIODE, and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3859



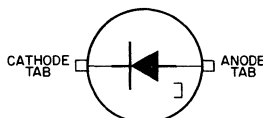
Tunnel Diode

GERMANIUM P-ON-N REGION, EPITAXIAL TYPE
For Switching and Small-Signal Applications
Requiring Control ($\pm 5\%$) of Peak-Point Current
and Switching Times Greater than 150 Picoseconds

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.055"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward	I_F	85 max.	ma
Reverse	I_R	125 max.	ma

DISSIPATION:

At free-air temperatures:			
From -35° to 25° C.		50 max.	mw
Above 25° C.	Derate linearly to 0 mw at 100° C		

FREE-AIR TEMPERATURE RANGE:

Operating	T_{OPR}	-35 to 100	$^{\circ}$ C
Storage	T_{STG}	-35 to 100	$^{\circ}$ C

TAB TEMPERATURE:^a

For 3 seconds maximum	T_T	175 max.	$^{\circ}$ C
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Electrical Characteristics:

At free-air temperature = 25° C

Min. Typical Max.

Static:^b

Peak-Point Current.	I_P	47.5	—	52.5	ma
Valley-Point Current.	I_V	—	—	6	ma
Peak-Point-to-Valley-Point					
Current Ratio	I_P/I_V	8/1	—	—	
Peak-Point Voltage.	V_P	80	—	130	mv
Valley-Point Voltage.	V_V	380	—	—	mv
Positive Voltage at peak-point					
ma. = 52.5.	$V_{F'}$	550	—	620	mv



1N3860

Min. Typical Max.

Dynamic:^c

Terminal Valley-Point Capacitance ^d	.C	-	-	12	pf
Total Series Resistance	.R _S	-	-	1.5	ohms
Switching Time:					
Rise time ^e	.t _r	-	150	-	psec

^a See *Soldering Considerations*.

^b See accompanying *Static-Forward-Characteristic* graph.

^c See accompanying *Equivalent Circuit of a Tunnel Diode in the Negative-Resistance Region*.

^d Includes case capacitance of 0.8 pf.

^e calculated rise time (approximate) for a germanium tunnel diode when switching from V_p to V_F at a constant value of I_p .

$$t_r \sim \frac{C(V_F - V_P)}{(I_P - I_V)} \sim \frac{C}{2 I_P}$$

SOLDERING CONSIDERATIONS,
DIMENSIONAL OUTLINE,
STATIC FORWARD CHARACTERISTIC
OF A TUNNEL DIODE,
and

EQUIVALENT CIRCUIT OF A TUNNEL DIODE
IN THE NEGATIVE-RESISTANCE REGION

shown under Type 1N3847 also apply to the 1N3860



Tunnel Rectifier

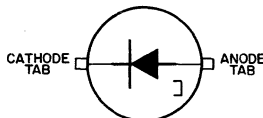
GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For use as Coupling Device in Memory
Systems and other Switching Applications

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Overall Length.	0.270"
Maximum Width.	0.130"
Maximum Height.	0.075"
Case.	Metal and Ceramic
Terminal Diagram (See <i>Dimensional Outline</i>):	



The arrow indicates direction of forward current flow as indicated by dc ammeter.

SWITCHING SERVICE

Maximum and Minimum Ratings, Absolute-Maximum Values:

DC CURRENT:

Forward.	I_F	10 max.	ma
Reverse.	I_R	30 max.	ma

DISSIPATION:

At free-air temperatures:

From -35° to 25° C.	10 max.	mw
Above 25° C.	Derate linearly to 0 mw at 100° C	

FREE-AIR TEMPERATURE RANGE:

Operating.	T_{OPR}	-35 to 100	$^{\circ}$ C
Storage.	T_{STG}	-35 to 100	$^{\circ}$ C

TAB TEMPERATURE:^a

For 3 seconds maximum.	T_C	175 max.	$^{\circ}$ C
--------------------------------	-------	----------	--------------

Electrical Characteristics:

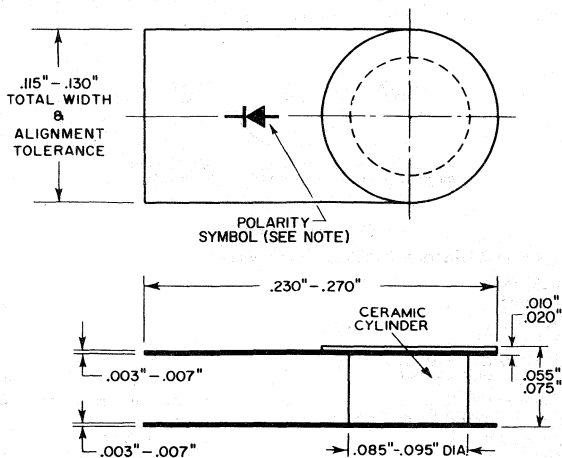
At free-air temperature = 25° C

		Min.	Max.	
Peak-Point Current.	I_P	0.1	1	ma
Reverse Voltage ^b for dc reverse				
ma. = 10.	V_R	-	170	mv
Positive Voltage at peak-point				
ma. = 1.	V_F	400	-	mv
Terminal Valley-Point Capacitance ^c . .	C	-	6	pf

^a See Soldering Considerations.^b See accompanying Static Characteristic of Tunnel Rectifier graph.^c Includes case capacitance of 0.4 pf.

SOLDERING CONSIDERATIONS

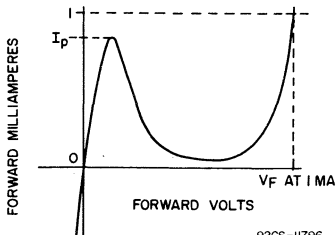
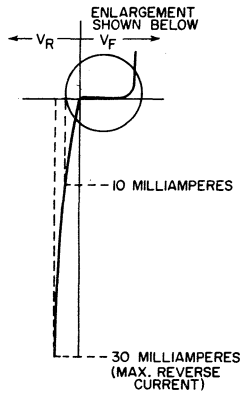
A low-temperature solder, (such as Alpha #111 alloy, rosin-filled, or equivalent) should be used. To minimize soldering time, a pre-tinned circuit board should be used. To protect the junction against overheating, the tunnel rectifier should be held with long-nose pliers.



92CS-11807

NOTE: ARROW INDICATES DIRECTION OF FORWARD CURRENT FLOW AS INDICATED BY DC AMMETER.

STATIC CHARACTERISTIC OF A TUNNEL RECTIFIER



92CS-11796



Tunnel Rectifier

GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For use as Coupling Device in Memory
Systems and other Switching Applications*The 1N3862 is the same as the 1N3861 except for the following items:*

Electrical Characteristics:

At free-air temperature = 25° C

		Min.	Max.	
Reverse Voltage: ^b	V_R			
With dc reverse ma. = 10.		—	150	mv
With dc reverse ma. = 30.		—	300	mv
Positive Voltage at peak point ma. = 1. . .	V_F	420	—	mv
Terminal Valley-Point Capacitance ^c . . .	C	—	4	pf

^b See accompanying Static Characteristic of Tunnel Rectifier graph.^c Includes case capacitance of 0.4 pf.

Tunnel Rectifier

GERMANIUM P-ON-N REGION, EPITAXIAL TYPE

For use as Coupling Device in Memory
Systems and other Switching Applications

The 1N3863 is the same as the 1N3861 except for the following items:

Electrical Characteristics:

At free-air temperature = 25° C

		Min.	Max.	
Peak-Point Current.	I_P	0.1	0.5	ma
Reverse Voltage: ^b	V_R			
With dc reverse ma. = 10.		—	150	mv
With dc reverse ma. = 30.		—	300	mv
Positive Voltage at peak point ma. = 1. . .	V_F	435	—	mv
Terminal Valley-Point Capacitance ^c . . .	C	—	4	pf

^b See accompanying Static Characteristic of Tunnel Rectifier graph.

^c Includes case capacitance of 0.4 pf.

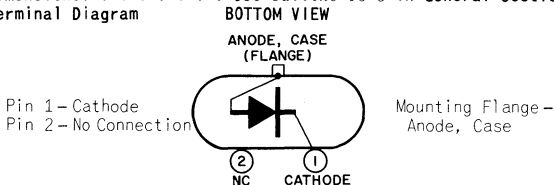


Television Damper Diode

DIFFUSED-GERMANIUM TYPE

For Use in Damper Service in Transistorized 114-Degree, 18-kV Horizontal Deflection Systems as Part of a Transistor/Damper-Diode Complement with Transistor Types 2N3730, 2N2731, and 2N3732

Dimensions. See Outline TO-3 in General Section
Terminal Diagram



TELEVISION DEFLECTION SERVICE

Absolute-Maximum Ratings

Reverse Voltage			
Peak.	PRV	320	V
Continuous.	VR	60	V
Forward Current			
Peak.	iFM	10	A
Average.	IFA	7	A
Temperature Range			
Operating (Junction).	T(opr)	-65 to 85	°C
Storage.	T(stg)	-65 to 85	°C
Pin-Soldering Temperature ^a		230	°C
For 10 sec. max			

ELECTRICAL CHARACTERISTICS

Free-air temperature = 25° C

		Min	Max	
Peak Reverse Voltage.	PRV	320	-	V
IR = 1 mA				
Static Reverse Current.	IR	-	150	μA
VR = 10 V				
Static Forward Voltage Drop	VF	-	0.77	V
IF = 7A				

^a Measured at a distance not closer than 1/32 inch to seating surface.

**OPERATING CONSIDERATIONS,
TYPICAL DEFLECTION CIRCUITS AND PERFORMANCE DATA**
shown under Types 2N3730, 2N2731, and 2N3732
also apply to Type 1N4785



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DATA
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